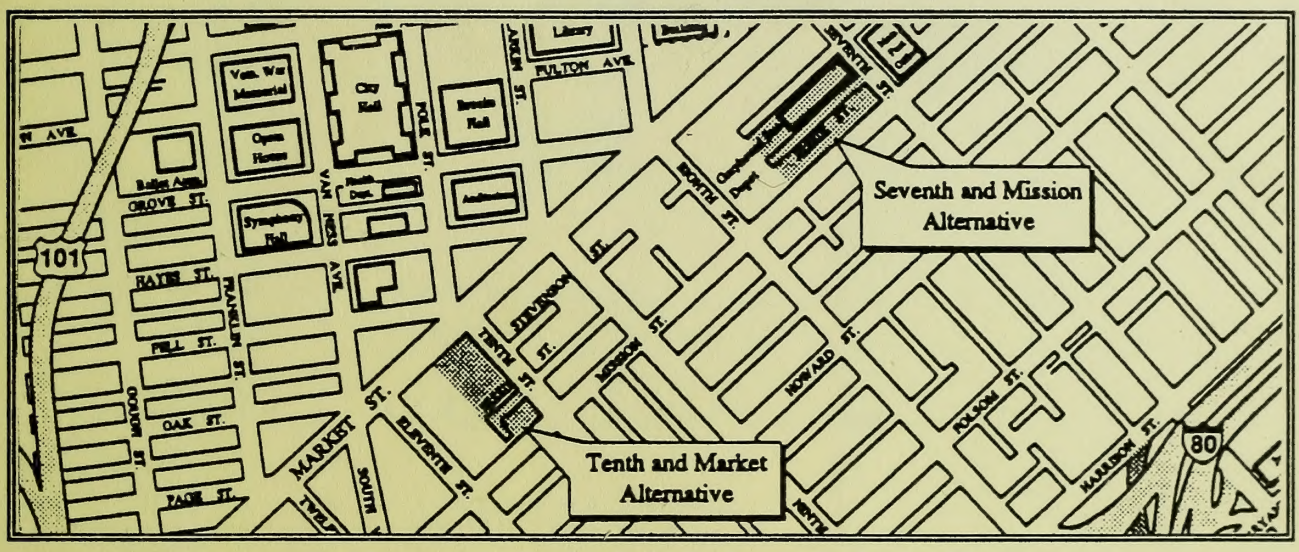
FINAL ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT

SAN FRANCISCO
FEDERAL BUILDING
CITY AND COUNTY OF SAN FRANCISCO, CALIFORNIA

VOLUME II - APPENDICES



Project Number: NCA04000 (GSA) and 94.157E (SF)
State Clearinghouse Number: 96042056

Lead Agencies:
United States General Services Administration, Pacific Rim Region (NEPA)
Department of City Planning, City and County of San Francisco (CEQA)
San Francisco Redevelopment Agency (CEQA)

Prepared for:
UNITED STATES GENERAL SERVICES ADMINISTRATION, PACIFIC RIM REGION
Through GSA Contract Number: GS-09P-91-KTD-0074
Delivery Order Number: P-09-94-KT-0037

Prepared by:

Fugro West, Inc.
1050 Melody Lane, Suite 160
Roseville, California 95678

March 21, 1997

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FINAL ENVIRONMENTAL IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT (FEIS/EIR)
SAN FRANCISCO FEDERAL BUILDING
CITY AND COUNTY OF SAN FRANCISCO

APPENDICES

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APPENDIX A

NOTICE
AND
TRANSCRIPT OF PUBLIC SCOPING MEETING

SAN FRANCISCO
Independent
1201 Evans Avenue, San Francisco, CA 94124

PROOF OF PUBLICATION
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State of California
City & County of San Francisco

I am a citizen of the United States and a resident of the County aforesaid. I am over the age of eighteen years and not a party to or interested in the above matter. I am the principal clerk of the printer and publisher of THE SAN FRANCISCO INDEPENDENT, a newspaper of general circulation printed and published on Tuesday, Thursday and Saturday, in the City and County of San Francisco, and which newspaper has been adjudicated a newspaper of general circulation by the Superior Court of the City and County of San Francisco, State of California under the date September 8, 1972 recorded under Case No. 649977, that the notice of which the annexed is a printed copy (set in type not smaller than n on pareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

> MAY 25, 1993

I declare under penalty of perjury that the foregoing is true and correct.

Executed on MAY 28, 1993
in San Francisco, California

(Signature)

for Ted Fang, Publisher

PUBLIC INFORMATION NOTICE

The General Services Administration (GSA) and the San Francisco Redevelopment Agency (SFRA) invite public officials and other concerned parties to participate in a public scoping process for the preparation of a joint Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act and an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act.

The joint EIS/EIR will address the planned construction of a new Federal Building on a site to be donated to the Federal Government by the City and County of San Francisco. A Proposed site of approximately 95,038 square feet has been identified: the eastern portion of a block bounded by Market, Tenth, Mission, and Eleventh Streets. The site, just south of the San Francisco Civic Center area, is currently owned by the Bank of America National Trust and Savings Association, a national banking association, and is adjacent to the Bank of America Data Center.

The proposed Federal Building would house Federal Executive Agencies in general purpose office space not to exceed 475,000 occupiable square feet. Interior and/or exterior parking to meet official agency needs will also be provided. General Services Administration will be working to establish future design considerations.

Public participation in the scoping process is encouraged to identify potential issues of concern which should be addressed in the EIS/EIR. Both written and/or oral comments are solicited and will be considered.

A public scoping meeting will be held on May 27, 1993 from 4:00 p.m. to 7:00 p.m. at the offices of the SFRA, Third Floor Commission Conference Room, located at 770 Golden Gate Avenue, San Francisco, California. Interested parties who wish to present oral comments at the meeting may register prior to the start of the meeting. Speakers will be heard in the order of registration and will be asked to limit comments to five minutes per individual or ten minutes for one person representing an organization. No time consolidations will be permitted. All oral comments will be recorded.

Interested parties are also invited to provide written comments in addition to, or in lieu of, oral comments at the meeting. Written comments may be submitted at the registration table of the scoping meeting, sent postmarked no later than June 3, 1993, or sent by facsimile transmission to (415) 744-6117 no later than 3:00 p.m. on June 3, 1993. Written comments should be addressed to Mr. Paul Coviello, GSA Planning Staff (9PL), Public Buildings Service, 525 Market Street, San Francisco, California 94105

Redevelopment Agency of the City and County of San Francisco
Donald P. Mcilcoza
Assistant Secretary

OSC/NS1096386 May 25

Part III of the order requires Ion Systems to cease representing any performance characteristics of the NO–RAD System or any similar device unless at the time of making such representation it possesses and relies upon competent and reliable scientific evidence to substantiate the representation.

Part IV of the order provides that, whenever Ion Systems represents that the NO–RAD System or any other radon or radon progeny remediation device reduces radon decay products by any quantitative amount, the company must affirmatively disclose in the advertising, labelling, packaging, offering for sale, sale or distribution of such device that, when radon decay products are reduced by any given amount, the reduction in risk of contracting radon-related lung cancer will always be less and that the amount of risk reduction will vary.

Part V provides that Ion Systems may not offer for sale, sell, or distribute any components of the NO–RAD System or any similar device to any entity that Ion Systems knows or has reason to know represents any performance characteristic of these devices unless such entity possesses and relies upon competent and reliable scientific evidence that substantiates the representation.

Parts VI–IX of the order are standard provisions requiring Ion Systems to maintain records, distribute copies of the order to company personnel and others, notify the Commission of changes in corporate structure, and file reports setting forth its compliance with the order.

The purpose of this analysis is to facilitate public comment on the proposed order. It is not intended to constitute an official interpretation of the agreement and proposed order or to modify in any way their terms.

Donald S. Clark,
Secretary.
[FR Doc. 93–11743 Filed 5–17–93; 8:45 am]
BILLING CODE 6750–01–M

GENERAL SERVICES ADMINISTRATION

Intent To Prepare an Environmental Impact Statement for a Proposed Federal Building in San Francisco, CA

The General Services Administration (GSA) hereby gives notice that it intends to prepare an Environmental Impact Statement (EIS) in cooperation with the City of San Francisco (City) to disclose the environmental effects of constructing a proposed federal building in San Francisco, California. The proposed building would provide up to 475,000 occupiable square feet of general office space and located on a site to be donated by the City at Tenth and Market Streets. The EIS will be prepared in accordance with the National Environmental Policy Act (NEPA).

GSA invites interested individuals, organizations, and federal, state and local agencies to participate in defining the reasonable alternatives to be evaluated in the EIS and in identifying any significant social, economic, or environmental issues related to the alternatives. Scoping will be accomplished by correspondence and through a public meeting. The meeting is scheduled for May 27, 1993, from 4 p.m. to 7 p.m., at the City of San Francisco Redevelopment Agency, 770 Golden Gate Avenue, San Francisco, California. Comments received during the meeting will be made a part of the administrative record for the EIS and will be evaluated as part of the scoping process.

Written comments on the scope of alternatives and potential impacts may be addressed to Mr. Paul Coviello, GSA Planning Staff (9PL), Public Buildings Service, 525 Market Street, San Francisco, California 94105, telephone number (415) 744–5252. Comments should be sent to GSA by May 28, 1993.

A Draft EIS will be prepared based upon the scoping efforts. After its publication, the Draft EIS will be available for public and agency review and comment. A Final EIS will be prepared that addresses the comments on the Draft EIS.

Dated: May 6, 1993.
Akl K. Nakao,
Deputy Regional Administrator (9AD).
[FR Doc. 93–11675 Filed 5–17–93; 8:45 am]
BILLING CODE 6820–23–M

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Administration for Children and Families

Agency Information Collection Under OMB Review; Office of Family Assistance

AGENCY: Administration for Children and Families, HHS.

ACTION: Notice.

Under the provisions of the Paperwork Reduction Act (44 U.S.C. chapter 35), we have submitted to the Office of Management and Budget (OMB) a request for the reinstatement of an information collection for the Administration for Children and Families. This information collection titled: "Quarterly Report of JOBS IV–F, Expenditures Uniform Reporting Requirements—ACF 332" was previously approved under OMB control number 0970–0116.

ADDRESSES: Copies of the Information Collection request may be obtained from Steve Smith, Office of Information Systems Management, ACF, by calling (202) 401–9235.

Written comments and questions regarding the requested approval for information collection should be sent directly to: Kristina Emanuels, OMB Desk Officer for ACF, OMB Reports Management Branch, New Executive Office Building, room 3002, 725 17th Street, NW., Washington, DC 20503, (202) 395–7316.

Information on Document

Title: Quarterly Report of JOBS IV–F Expenditures Uniform Reporting Requirements—ACF–332.

OMB No.: 0970–0116.

Description: This collection of information is authorized by section 403 of the Social Security Act, as amended by section 201(c) of Public Law 100–485 (the Family Support Act of 1988). This provision of the Act authorizes funding for States to implement the Job Opportunities and Basic Skills Training Program (JOBS). Section 403 of the Act also requires Federal reimbursement to States in support of activities authorized by the Family Support Act.

The information submitted on form ACF 332 will be used by the States to provide specific expenditure data in four major categories of Title IV–F costs. These cost categories include:

(1) Expenditures for JOBS program assignments (Job program components and job entry),

(2) Expenditures for supportive services,

(3) Other non-component program expenditures,

(4) Total JOBS IV–F expenditure.

For each of the four categories, expenditures must be recorded for the following:

(a) IV–F expenditures (State and Federal) for the current quarter, and

(b) Cumulative fiscal year IV–F expenditures (State and Federal).

The report also provides aggregated expenditure information that when used with unaggregated information collection reported on OMB approved form, ACF 108, Jobs Program Participant Data Collection Form ACF–108, (OMB No. 0970–0112) will enable the States and the Office of Family Assistance to respond to the uniform data collection requirements of the JOBS program

SAN FRANCISCO FEDERAL BUILDING

10TH and MARKET STREETS

SAN FRANCISCO, CALIFORNIA

PUBLIC ENVIRONMENTAL SCOPING MEETING

SAN FRANCISCO REDEVELOPMENT AGENCY
770 GOLDEN GATE AVENUE
ROOM 300
SAN FRANCISCO, CALIFORNIA 94102
THURSDAY, MAY 27, 1993
4:00 P.M. - 7:00 P.M.

TRANSCRIPT OF PROCEEDINGS

Reported by:
Freda A. Williams
San Francisco Redevelopment Agency
770 Golden Gate Avenue
San Francisco, California 94102
(415) 749-2497

September 15, 1993

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SAN FRANCISCO
CALIFORNIA

May 27, 1993
4:00 PM - 7:00 PM

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Al Liu (MODERATOR): Good afternoon. On behalf of the San Francisco Redevelopment Agency and the United States General Services Administration (GSA), I would like to welcome everyone to this public environmental scoping meeting. My name is Al Liu. I'm a Planning Supervisor with the General Services Administration Regional Office in San Francisco.

I would like to introduce a few of the people here who you may not know. First, from GSA: Ms. Mary E. Brant, Regional Director of Planning, we also have Ms. Joan Byrens, Senior Planner, we also have assisting us Ms. Cecilia Tracz, and Ms. Glenda Peterson, who are staffing the Sign-In Desk. Representing the San Francisco Redevelopment Agency we have Ms. Barbara Amato, Assistant Project Coordinator, we also have Mr. Robert Firehock, Deputy General Counsel. Bob would you like to say a few words?

Bob Firehock: I would just like to welcome everybody to the Redevelopment Agency and describe the first formal step in the process of exploring the possibility of having a new Federal Office Building in San Francisco. The Agency role in this process is to facilitate the transaction. The Agency has established a Redevelopment Survey Area at the proposed site at 10th and Market and we are looking at the possibility of acquiring that site; vacating a

public street, aggregating that parcel, and conveying that parcel to the GSA on behalf of the U.S. Government for the construction of a new Federal Office Building. Now we are beginning a lengthy process which will involve a lot of public input and a lot of consideration and a lot of steps to be covered. This is the first step in the environmental review the Agency process. The Agency is the lead agency for the City of San Francisco undertaking this transaction and we are coming to an agreement with GSA on a joint environmental process and of course everything we will be doing will be subject to a successful completion of that process which as I said is starting today. I will be here, along with the GSA, to take comments from members of the public. We welcome public participation in the process and look forward to a joint effort with GSA.

Al Lui: As Mr. Firehock mentioned, GSA and the Redevelopment Agency do intend to prepare a joint Environmental Impact Statement (EIS) and Environmental Impact Report (EIR) and GSA will serve as the lead agency on the EIS and the Redevelopment Agency will be the lead agency for the EIR. At this point for those in the audience who may ask what exactly is a Environmental Impact Statement (EIS) maybe I can briefly go over what it is and what the process is.

The EIR is a detailed written document produced in accordance with NEPA and the Council on Environmental Quality regulations implementing NEPA. The EIS will provide a full and fair discussion of significant environmental impacts and will inform decision makers and the public of the alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.

The EIS will consider all reasonable alternatives including the No-Action alternative.

We have here along the wall a chart and I just want to briefly go over it to show you how a scoping meeting fits in. The beginning of the EIS process (the scoping meeting) is an opportunity for the public and other agencies to give us input on their concerns, and Scope of how the EIS should be conducted. The Draft EIS will be based partly on issues discussed at the scoping meeting. After the Draft Environmental Impact Statement is issued the public again will have the opportunity to provide comments and to attend a public hearing on the Draft Environmental Impact Statement. After that process is completed a Final EIS is prepared in response to the comments we receive, after which time a Final EIS will be published, and after that a Record of Decision will be made by the decision maker and as you can see an important part of the Environmental Impact Statement process is public involvement. We want to hear your comments on what you believe should be studied in the Environmental Impact Study including any alternatives that you believe will be appropriate for us to consider. Now I would like to ask Joan Byrens to give you the background and history related to the proposed project. After her presentation, we will open the meeting for your comments.

Joan Byrens: I'd like to provide you with a little background information about the Federal office presence in the City of San Francisco. General Services Administration, or GSA, currently provides a total of over 3.6 million occupiable (or net) square feet of space for Federal offices in San Francisco. Of this total, over 1.6 million square feet of space is in federally owned

buildings, while over 1.9 million square feet, or 54% of the total inventory, is currently in leased space.

As a general rule, and especially in communities when the ratio of government-owned space to leased space is relatively low, GSA prefers to provide agencies space in federally owned buildings. In the long term, it is usually less expensive to own and operate our own buildings. Furthermore, we are better able to provide for the special needs of some federal agencies; and we can design for the larger floor plate which provides more efficient space layouts for typical federal agency functions. Because the City of San Francisco is a regional headquarters for many agencies, we do have a continuing need for large blocks of space. Although fluctuations in agency size do occur from time to time, overall our San Francisco inventory is relatively stable and even increasing slightly.

Consequently, it is even more important to acquire federal space in a city such as San Francisco where today large floor plates and large blocks of space are not always readily available in the commercial office market. Although Congress is cognizant of nation-wide market conditions, as is GSA, in markets such as San Francisco we find lower vacancy rates than in many major cities nationwide and a shortage of appropriate space.

The Continuing Appropriations Resolution for Fiscal Year 1988, authorized the Administrator of General Services Administration to acquire a Federal Building on a site to be donated by the City of San Francisco. The Resolution authorized a building of approximately 430,000 occupiable square feet. In 1992,

Congress amended the language of the original authorization to increase the size of the building; to not exceed 475,000 occupiable square feet.

During the years following the original authorization, General Services Administration cooperated with the City in an attempt to identify an appropriate site. Eventually an offer of the site at the southwest corner of 10th and Market Streets was extended to GSA. The site under consideration is approximately 95,038 square feet, or just over 2 acres, and is the eastern portion of the block bounded by Market, 10th, Mission and 11th Streets. The site, is in the southern portion of the San Francisco Civic Center area, is currently owned by the Bank of America and is adjacent to the Bank of America Data Center. (If you have not already done so, you may want to pick up a copy of the public information notice Glenda has over there at the Registration Desk. A site map is on the reverse side of the page.)

The 10th and Market Street site appears to be acceptable and GSA and the City are currently completing site evaluations and working toward a possible agreement. We anticipate that final site conveyance would occur no earlier than mid-1994, after the environmental impact review process is completed.

At the present time, GSA is proceeding with some internal approvals. Although tenant agencies have not yet been selected, we do expect to provide general purpose office space to executive branch agencies. Interior and exterior parking to meet official agency needs will also be provided.

No conceptual design activity has yet been started. The environmental process, therefore, is being initiated early in the planning stage, thus

maximizing the opportunity for input to the future design approach and to project decisions. We look forward to your participation in this process and we appreciate your attendance here. We welcome your contributions this afternoon.

Al Liu: Thank you Joan, and now I would like to open the meeting for public comments. Has anyone signed up to speak at this point? Would anyone speaking let me know who they represent and if you do want to speak we would like to ask you limit your remarks to about five minutes. If you are representing an organization, then we would like to ask you to keep your remarks to about 10 minutes.

I would like the name or organization who may want to speak at this point. Incidentally I would like to let you all know that this meeting is being recorded and a transcript will be prepared in reference to our EIS and also if you have any written comments you may provide them to us today or they can be mailed to us by June 3, 1993. They will also be included as part of the scoping record. If you are going to speak up here please, we request that you spell you first and last name for the benefit of the recorder.

Speaker 1 Eila Arbuckle: I am with the San Francisco Mayor's Office, I would like to ask a question about the programming activities of the federal agencies that will occupy the building if there is a schedule for the programming steps, I assume that will be done in conjunction with your own environmental site study. But I am interested in identifying the programming steps.

Could you define some of the programming interests that you are looking at, which agencies San Francisco you will be surveying, Federal Agencies

identifying their space needs and determining which ones would be best suited for occupancy in the new federal building? Will you serve all federal agencies in San Francisco, only those federal agencies that are currently in lessee space, and how would you make a decision that which ones will occupy the proposed new building?

Al Liu: To answer that question I believe at this point there is no definitive list of agencies being identified specifically to use the building at this time, because as we said this is a early stage of the process. We anticipate that in order to meet some of the objectives that Joan outlined, that most of the agencies could conceivably come out of leased space, however they may not exclusively come from leased space. We will survey agencies that will fit the requirements for general office space and there are several or many of those agencies within the San Francisco area.

Speaker 1 Eila Arbuckle: Will those agencies necessarily be the federal agencies which maintain the regional headquarter in San Francisco or miscellaneous agencies that have offices, not just in San Francisco now but there are several agencies that are rather in scattered locations throughout the bay area? Will they be included in a survey and could they be considered for consolidation in the San Francisco Federal Building?

(Al Liu): I believe when the process of reviewing the agencies commences we will review every appropriate agency that fits the definition that we have outlined so that we have a broad review of the agencies involved.

Eila Arbuckle: Will it be Bay Area wide or limited to the agencies currently in San Francisco or will there be other criteria?

Al Liu: I do not believe that we have made that kind of a cut at this time, but its possible that agencies small or large that fit the category can be considered outside the San Francisco area. However this is the San Francisco Federal Building and we anticipate that most of them will be from within San Francisco.

Eila Arbuckle: From within the currently 1.9 million square feet of leased space?

Al Liu: That and as you mentioned if they happen to be within the category. Yes.

Speaker 2 Sue Hester: Representing Citizens for Representative Government. The first thing is to please put in the EIS really up front the real size of the building. The Federal Government and the Redevelopment Agency don't count space the way everyone else in San Francisco counts space. Occupiable space is one thing, the space on the skyline is another thing, so please provide that information and don't make us have to calculate it out after the fact.

Second thing is the Federal Government has a history of doing terrible ugly buildings in the city, buildings that would not meet the approval standards of our very weak Planning Commission. What are you going to do to improve the architecture of the Federal Building and that is especially important when you are talking about the massive block of your building which will not conform with the City standards for design. The Redevelopment Agency has more lax standards but even their standards would take a blocked building of this size

and enormity of fitting that size of building on this site. All of the rough isometrics that have been seen on this project thus far are horrifying.

The third is this is an extremely sensitive site for wind and shadow impact. Do a shadow fan, I am sure you know that the Planning Department has shadow fan models. They have been doing this in San Francisco for about the past 10 years. Because of the wind coming down Hayes Street and hitting the Fox Plaza and California State Automobile Association (AAA) building and the current Bank of America building that is on site, this is just about the most pedestrian unfriendly area of town. If this building worsens the problem, people literally will not be able to walk across the street when the winds are coming. It is already at that level when there is a strong wind coming down the hills. It is a situation where you can worsen it or you can improve it in your design and if you worsen it I think you are going to have to turn down the building because if the situation gets worse for this building I don't think we will have an approved building. So spend a lot of time do wind and shadow studies especially if you shadow an enormous amount of the sidewalk because if you have a windy situation and shadow it makes the wind worse and make the climate worse. Spend a lot of time on climate in this area and redesigning bulk to minimize the impact on wind and shadow.

The other thing you need to include is that this site has a significant impact on the skyline from both freeways to the south, I can never remember what they call it, but the cross connector as you go over to what used to be the Fell and Oak Streets ramp but I think its 101 at that point. This will be a very prominent building on the skyline and Bank of America is very visible and it also very visible when you are coming down Oak Street and you cross the hill

around Divisadero Street. The Bank of America building right now is the most prominent thing on the skyline and it looks pretty ugly. So do perspectives for how it is going to look from several places but also do some distant ones on Oak Street and from 101.

You need to do analysis on how this project is going to displace businesses as well as create another for office growth scenario in the Upper Market area. This is not an area that the City has designated for office developement or has it assumed what would occur for intense office development at anytime in the near future. The core area that the City has been modeling is much more downtown around the BART Stations and around the core South of Market area. The secondary area that the City has been planning for with all of its transportation programs is Mission Bay. The City has no plans for transportation situation in this area at all. The concentration for growth of jobs is assumed to be elsewhere and so all of the assumptions the city has been making for the past 15-20 years are in terms of where transportation resources, in particularly transit resources, are to be placed are not in this area. So you are moving into area that the city doesn't really serve well from the East Bay because BART is a hike away on an unfriendly street in the late afternoon, especially when it is dark. So you will have tugging for your employees to use their cars which is a possibility and is more convenient in this part of town then it is in the downtown core. Because there are parking lots in the Civic area, especially South of Market where this one willbe

located, so you will have and you need to study how this location generates a higher proportion of auto usage than it would be downtown as well as how the

city has shifted its resources for dealing with office works downtown and you will be out of sink with that.

Also this area has fairly low income or low rent space. It is not the downtown core, it is not 25-40 dollars or anything at that level office space but you will be generating a demand in that area that will have to be met for all kinds of services. Please discuss identification and displacement aspects of this project not only for the people that are there in existing offices, for retail uses and for housing because there is housing right across the street from this site and near this site. You need to examine a couple of alternatives; one of them is the fire sale nature of buildings downtown. I understand it is providing construction jobs and the Federal Government is not known for not passing away money but there really should be questions raised about whether it makes sense to build additional office space when everyone who tracks office space in San Francisco knows that it is really along time before the buildings they are already built let alone the 7 or 8 that are already approved, will ever get filled up. And I don't know that it makes ultimate financial sense for the tax payers to be paying for an ideal large (floor) plate office building when you have potentially a lot of buildings available in downtown San Francisco. They are already built or have the approvals either from the Redevelopment Agency or approvals from the Planning Commission and haven't gone anywhere.

I think you need to look at saving the taxpayers some money on this and does this make sense and why is the large floor plate taken as it is a given and I challenge that. Why is there a desire for large plate buildings? Large plate buildings are not looked on with warmth in San Francisco because of the type. We are not Los Angeles, we have a fairly tight street pattern, and the

impact of large buildings can be substantial especially in term of shadow, especially in term, of moving over their neighbor. And so you should tell me what the rational of a large floor plate building and why you can't fit into other buildings downtown that have their approvals? Also you need to evaluate this project as though it was coming through the San Francisco Planning process and I stress San Francisco Redevelopment process which is a weak sister to put it mildly. I don't think the building I've seen in your models would fit within the downtown plan guidelines for bulk. Please discuss how this project, as you use the term, addresses the standards the city applies to buildings that have to be approved by the Planning Commission, especially the Downtown Plan guidelines for bulk and set backs and notchings because you are not going to meet them and you need to tell us that you are not going to meet and how they are not going to be meet.

You also need to address the issues that are in the Environmental Impact Report drafted in San Francisco for downtown office space in terms of the impact on housing; how much demand is going to be generated and not by just saying we are just going to relocate our people. When you relocate your people out of other office buildings that exist in San Francisco there are going to be additional people coming in so you are adding net office space. Don't respond there is no net housing demand because you are not hiring anyone else. Acknowledge the fact that when you abandon other space that space will be filled by someone else. Therefore, do a net housing demand analysis as it is done in San Francisco EIR's and also do a fairly concentrated transportation analysis because again you will not be in the main corridor for transit as the city has evolved its transit system of the region.

I also think you need to look at what is going to happen over the long-term on the rest of this block. The Bank of America acquired the entire block to build twin Data Centers. They acquired it over twenty years ago and the technology on computer centers was that you needed an enormous cooling tower and you built a building that basically housed a large computer. That is what is on the other half of this block. That building was obsolete before it opened and they never got around to doing the second building because they didn't need to have these large cooling tower buildings for computer processing. Is the Bank of America going to stay on that site over the long term given the fact that building is currently obsolete or is this building going to create an incentive for Bank of America to demolish its own building, and then generate commercial office building on that site? I think you need to look at what happens to the long term of this block and do some pre-notification.

I think I have gone down all of issues and I think they are substantial issues. And if you don't do an EIR that tracks that kind of information (an EIS that tracks that kind of information that comes through for an office buildings EIR as done by the San Francisco Planning Commission Department) you are just going to here these comments all over again when the comment period comes out on the EIS. Thank you.

Mr. Liu: Thank you.

I recognize Ms. Mary Brant. Yes, maybe it was a little lost in my first presentation. The deadline for written comments we are looking for is June 3, 1993. It should be post marked June 3rd.

(Mr. Liu) is there anyone else who would like to comment?

At this time I see no hands so I will leave the microphone open until the next person appears. We intend to be here until 7:00 p.m.

No further speakers appeared.

Public Scoping Meeting formally closed at 7:00 P.M.

GSAMTG2

APPENDIX B
AIR QUALITY CALCULATIONS

URBEMIS 5.0 MODEL OUTPUT

PROJECT NAME: SF Federal Building Date: 03-13-1996

Project Area: Bay Area

Analysis Year: 1999 Temperature (F): 50 Season: Winter

EMFAC Version: Emfac7f1.1(12/93)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Tot Trips
Government Office Building	4.5/1000 Sqft	475	2116

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	78.4	1.4	98.3	0.3
Light Duty Trucks	17.6	0.3	99.3	0.4
Medium Duty Trucks	0.4	1.5	98.5	0.0
Heavy Duty Trucks	0.1	21.2	78.8	N/A
Heavy Duty Trucks	0.5	N/A	N/A	100.0
Motorcycles	3.0	100.0	N/A	N/A

Travel Conditions:

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	11.7	4.6	6.1	6.4	6.4
% Started Cold	88.6	40.4	58.8	40.0	40.0
Trip Speed	25	25	25	25	25
Percent Trip	27.3	21.2	51.5		

Project Emissions Report in Lb/Day:

Unit Type	TOG	CO	NOx
Government Office Building	40.01	317.19	25.80
TOTALS	40.01	317.19	25.80

Project Emissions Report in Lb/Day (Continued)

Unit Type	FUEL (Gal.)	PM10	SOx
Government Office Building	606.3	2.96	1.81
TOTALS	606.3	2.96	1.81

ROG = TOG × 0.917 (1999) (ARB, 1995)

= 36.7

URBEMIS 5.0 MODEL OUTPUT

PROJECT NAME: SF Federal Building Date: 03-13-1996

Project Area: Bay Area

Analysis Year: 1999 Temperature (F): 70 Season: Summer

EMFAC Version: Emfac7f1.1(12/93)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Tot Trips
Government Office Building	4.5/1000 Sqft	475	2116

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	78.4	1.4	98.3	0.3
Light Duty Trucks	17.6	0.3	99.3	0.4
Medium Duty Trucks	0.4	1.5	98.5	0.0
Heavy Duty Trucks	0.1	21.2	78.8	N/A
Heavy Duty Trucks	0.5	N/A	N/A	100.0
Motorcycles	3.0	100.0	N/A	N/A

Travel Conditions:

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	11.7	4.6	6.1	6.4	6.4
% Started Cold	88.6	40.4	58.8	40.0	40.0
Trip Speed	25	25	25	25	25
Percent Trip	27.3	21.2	51.5		

Project Emissions Report in Lb/Day:

Unit Type	TOG	CO	NOx
Government Office Building	28.05	209.75	21.85
TOTALS	28.05	209.75	21.85

Project Emissions Report in Lb/Day (Continued)

Unit Type	FUEL (Gal.)	PM10	SOx
Government Office Building	606.3	2.96	1.81
TOTALS	606.3	2.96	1.81

Project: San Francisco Federal Building
Date: 03/13/96

Stationary Source Emissions

Natural Gas Combustion Calculations

				Emission Factors-lb/million ft3				Emissions-lb/day			
Land use	Size	Days/Month	ft3/unit/month	CO	NOx	PM	ROC	CO	NOx	PM	ROC
Single Family	0	30.4	6665.0	20.00	80.00	0.15	5.30	0.00	0.00	0.00	0.00
Multi-family	0	30.4	4011.5	20.00	80.00	0.15	5.30	0.00	0.00	0.00	0.00
Industrial	0	20.8	3.3	20.00	120.00	0.15	5.30	0.00	0.00	0.00	0.00
Retail	0	30.0	2.9	20.00	120.00	0.15	5.30	0.00	0.00	0.00	0.00
Office	475,000	20.8	2.0	20.00	80.00	0.15	5.30	0.91	3.65	0.01	0.24
Hotel	0	30.4	4.8	20.00	80.00	0.15	5.30	0.00	0.00	0.00	0.00
						Pound/day Gas		0.91	3.65	0.01	0.24

Electrical Generation Calculations

				Emission Factors-lb/1000 KWh				Emissions-lb/day				
Land Use	Units	Days/Year	KWh/unit/year	CO	NOx	PM	ROC	CO	NOx	PM	ROC	SOx
Residential	0	365.0	5626.50	0.20	1.15	0.04	0.01	0.00	0.00	0.00	0.00	0.00
Office	475,000	250.0	12.95	0.20	1.15	0.04	0.01	4.92	28.30	0.98	0.25	2.95
Restaurant	0	360.0	47.45	0.20	1.15	0.04	0.01	0.00	0.00	0.00	0.00	0.00
Retail	0	360.0	13.55	0.20	1.15	0.04	0.01	0.00	0.00	0.00	0.00	0.00
Food store	0	365.0	53.30	0.20	1.15	0.04	0.01	0.00	0.00	0.00	0.00	0.00
Warehouse	0	250.0	4.35	0.20	1.15	0.04	0.01	0.00	0.00	0.00	0.00	0.00
Elementary School	0	240.0	5.90	0.20	1.15	0.04	0.01	0.00	0.00	0.00	0.00	0.00
High School	0	240.0	10.50	0.20	1.15	0.04	0.01	0.00	0.00	0.00	0.00	0.00
College	0	240.0	11.55	0.20	1.15	0.04	0.01	0.00	0.00	0.00	0.00	0.00
Hospital	0	365.0	21.70	0.20	1.15	0.04	0.01	0.00	0.00	0.00	0.00	0.00
Hotel/motel	0	365.0	9.95	0.20	1.15	0.04	0.01	0.00	0.00	0.00	0.00	0.00
Miscellaneous	0	250.0	10.50	0.20	1.15	0.04	0.01	0.00	0.00	0.00	0.00	0.00
						Pound/day Electric		4.92	28.30	0.98	0.25	2.95
						TOTAL Pounds/Day		5.83	31.95	0.99	0.49	2.95

CONVERSION OF EMFAC7F/BURDEN7F DATA FOR CALINE4

Year 2010
County San Francisco
Trip length 6.3

Vehicle Type	County VMTx1000	Percent VMT	Emission factors (g/mile) @ mph 5	10	15	20	25	Cold Start Adjustment (g/trip)	(g/mi)
NCAT Auto	2	0.02	186.89	91.99	60.36	45.12	36.10	103.93	9.40
CAT Auto	7,498	77.87	6.51	3.86	2.65	2.02	1.65	22.98	2.08
Diesel Auto	3	0.03	5.94	4.10	2.96	2.23	1.77	9.47	0.86
NCAT LDT	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CAT LDT	1,330	13.81	8.23	4.76	3.29	2.56	2.14	62.79	5.68
Diesel LDT	0	0.00	5.15	3.55	2.56	1.94	1.53	6.33	0.57
NCAT MDT	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CAT MDT	468	4.86	10.01	5.78	4.00	3.12	2.60	94.68	8.56
NCAT HDT	12	0.12	59.19	39.38	27.68	20.56	16.13	0.00	0.00
CAT HDT	96	1.00	32.10	21.36	15.01	11.15	8.75	0.00	0.00
Diesel HDT	114	1.18	34.91	24.07	17.37	13.12	10.37	0.00	0.00
Bus	41	0.43	68.04	46.92	33.86	25.57	20.21	0.00	0.00
Motorcycle	65	0.68	52.97	25.47	16.72	12.83	10.50	107.50	9.72
SUM	9,629	100							

Composite Factors	8.19	4.88	3.37	2.58	2.10	2.89
Composite Cold Start		2.89	2.89	2.89	2.89	
Total g/mi		7.77	6.26	5.46	4.99	

Trip length and County VMT from BURDEN7F
Emission factors from EMFAC7F
Cold start adjustment: g/trip*(3.59/trip length)/trip length
Idle emission factor: g/mi @ 5 mph * 5 mph/60 min/hr

Idle Emission Factor (g/v-min) 0.68

1 PREDICTED CALIFORNIA VEHICLE EMISSIONS RUNDATE: 03/13/96

CARBON MONOXIDE PLANNING INVENTORY

YEAR: 2010 SAN FRANCISCO COUNTY EMISSION UNIT: TONS PER DAY

E7F/B7F/V1.1 /DAILY EMISSIONS SAN FRANCISCO AIR BASIN I AND M PROGRAM IN EFFECT

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	LIGHT DUTY PASSENGERS				LIGHT DUTY TRUCKS			
	NON-CAT	CAT	DIESEL	TOTAL	NON-CAT	CAT	DIESEL	TOTAL
NO. OF IN USE VEHS	143	286148	287	286578	0	50767	30	50797
DAILY VMT (X 1000)	2	7498	3	7503	0	1330	0	1330
NO. OF HOT TRIPS	148	486794	195	487137	0	57053	16	57069
NO. OF COLD TRIPS	102	753432	302	753836	0	88304	26	88330
NO. OF DAILY TRIPS	250	1240226	497	1240973	0	145357	42	145399
TOTAL ORGANIC GAS EMISSIONS								
RUNNING EXHAUST	0.00	0.73	0.00	0.74	0.00	0.16	0.00	0.16
COLD START EXHAUST	0.00	1.57	0.00	1.57	0.00	0.26	0.00	0.26
HOT START EXHAUST	0.00	0.11	0.00	0.11	0.00	0.01	0.00	0.01
TOTAL EXHAUST	0.01	2.41	0.00	2.42	0.00	0.43	0.00	0.43
DIURNAL EVAPORATION	0.00	0.18	0.00	0.18	0.00	0.03	0.00	0.03
HOT SOAK EVAPORATION	0.00	0.43	0.00	0.44	0.00	0.04	0.00	0.04
RUNNING LOSSES	0.00	0.97	0.00	0.97	0.00	0.15	0.00	0.15
RESTING LOSSES	0.00	0.13	0.00	0.13	0.00	0.02	0.00	0.02
TOTAL TOG EMISSION	0.01	4.12	0.00	4.14	0.00	0.67	0.00	0.67

REACTIVE ORGANIC GAS EMISSIONS

RUNNING EXHAUST	0.00	0.63	0.00	0.63	0.00	0.13	0.00	0.13
COLD START EXHAUST	0.00	1.34	0.00	1.34	0.00	0.22	0.00	0.22
HOT START EXHAUST	0.00	0.09	0.00	0.09	0.00	0.01	0.00	0.01
TOTAL EXHAUST	0.01	2.06	0.00	2.07	0.00	0.37	0.00	0.37
DIURNAL EVAPORATION	0.00	0.18	0.00	0.18	0.00	0.03	0.00	0.03
HOT SOAK EVAPORATION	0.00	0.43	0.00	0.44	0.00	0.04	0.00	0.04
RUNNING LOSSES	0.00	0.97	0.00	0.97	0.00	0.15	0.00	0.15
RESTING LOSSES	0.00	0.13	0.00	0.13	0.00	0.02	0.00	0.02
TOTAL ROG EMISSION	0.01	3.78	0.00	3.79	0.00	0.61	0.00	0.61

CARBON MONOXIDE EMISSIONS

RUNNING EXHAUST	0.07	17.07	0.01	17.15	0.00	3.81	0.00	3.81
COLD START EXHAUST	0.01	17.42	0.00	17.43	0.00	5.46	0.00	5.46
HOT START EXHAUST	0.00	1.98	0.00	1.99	0.00	0.38	0.00	0.38
TOTAL CO EMISSION	0.09	36.48	0.01	36.57	0.00	9.65	0.00	9.65

OXIDES OF NITROGEN EMISSIONS

RUNNING EXHAUST	0.00	2.38	0.01	2.39	0.00	0.72	0.00	0.72
COLD START EXHAUST	0.00	1.12	0.00	1.12	0.00	0.19	0.00	0.19
HOT START EXHAUST	0.00	0.40	0.00	0.40	0.00	0.07	0.00	0.07
TOTAL NOX EMISSION	0.01	3.90	0.01	3.91	0.00	0.98	0.00	0.98

PARTICULATE MATTER EMISSIONS								
EXHAUST	0.00	0.08	0.00	0.08	0.00	0.01	0.00	0.01
TIRE-WEAR	0.00	1.65	0.00	1.65	0.00	0.29	0.00	0.29
TOTAL PM EMISSION	0.00	1.73	0.00	1.74	0.00	0.31	0.00	0.31
LEAD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OXIDES - SULFUR	0.00	0.35	0.00	0.35	0.00	0.08	0.00	0.08
FUEL CONSUMED IN 1000 GALLONS								
GASOLINE	0.10	257.37		257.47	0.00	60.33		60.33
DIESEL			0.10	0.10			0.01	0.01

1 PREDICTED CALIFORNIA VEHICLE EMISSIONS RUNDATE: 03/13/96

CARBON MONOXIDE PLANNING INVENTORY

YEAR: 2010 SAN FRANCISCO COUNTY EMISSION UNIT: TONS PER DAY

E7F/B7F/V1.1 /DAILY EMISSIONS SAN FRANCISCO AIR BASIN I AND M PROGRAM IN EFFECT

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	MEDIUM DUTY TRUCKS			GASOLINE TRUCKS			DIESEL	TOTAL HD	URBAN	MOTOR-	ALL
	NON-CAT	CAT	TOTAL	NON-CAT	CAT	TOTAL	TRUCKS	TRUCKS	BUSES	CYCLES	VEHICLES
NO. OF IN USE VEHS	0	17890	17890	1030	7194	8224	2778	11002	394	16816	383477
DAILY VMT (X 1000)	0	468	468	12	96	108	114	222	41	65	9629
NO. OF HOT TRIPS	0	19928	19928	6284	31557	37841	0	37841	0	6551	608526
NO. OF COLD TRIPS	0	30844	30844	4106	48089	52195	0	52195	0	4556	929761
NO. OF DAILY TRIPS	0	50772	50772	10390	79646	90036	0	90036	0	11107	1538287
TOTAL ORGANIC GAS EMISSIONS											
RUNNING EXHAUST	0.00	0.16	0.16	0.03	0.08	0.11	0.35	0.46	0.24	0.20	1.95
COLD START EXHAUST	0.00	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.09	2.12
HOT START EXHAUST	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.15
TOTAL EXHAUST	0.00	0.37	0.37	0.03	0.08	0.11	0.35	0.46	0.24	0.31	4.22
DIURNAL EVAPORATION	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
HOT SOAK EVAPORATION	0.00	0.01	0.01	0.01	0.09	0.10	0.00	0.10	0.00	0.01	0.60
RUNNING LOSSES	0.00	0.05	0.05	0.00	0.01	0.01	0.00	0.01	0.00	0.00	1.17
RESTING LOSSES	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
TOTAL TOG EMISSION	0.00	0.45	0.45	0.04	0.18	0.22	0.35	0.57	0.24	0.33	6.39

REACTIVE ORGANIC GAS EMISSIONS

RUNNING EXHAUST	0.00	0.13	0.13	0.02	0.07	0.10	0.34	0.44	0.23	0.19	1.75
COLD START EXHAUST	0.00	0.17	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.09	1.82
HOT START EXHAUST	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.13
TOTAL EXHAUST	0.00	0.31	0.31	0.02	0.07	0.10	0.34	0.44	0.23	0.29	3.71
DIURNAL EVAPORATION	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
HOT SOAK EVAPORATION	0.00	0.01	0.01	0.01	0.09	0.10	0.00	0.10	0.00	0.01	0.60
RUNNING LOSSES	0.00	0.05	0.05	0.00	0.01	0.01	0.00	0.01	0.00	0.00	1.17
RESTING LOSSES	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
TOTAL ROG EMISSION	0.00	0.39	0.39	0.04	0.17	0.21	0.34	0.55	0.23	0.30	5.88

CARBON MONOXIDE EMISSIONS

RUNNING EXHAUST	0.00	1.63	1.63	0.27	1.11	1.38	1.62	3.00	1.12	0.92	27.64
COLD START EXHAUST	0.00	2.88	2.88	0.00	0.00	0.00	0.00	0.00	0.00	0.51	26.29
HOT START EXHAUST	0.00	0.16	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.04	2.57
TOTAL CO EMISSION	0.00	4.68	4.68	0.27	1.11	1.38	1.62	3.00	1.12	1.47	56.50

OXIDES OF NITROGEN EMISSIONS

RUNNING EXHAUST	0.00	0.75	0.75	0.08	0.33	0.41	1.46	1.87	0.93	0.07	6.73
COLD START EXHAUST	0.00	0.18	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.49
HOT START EXHAUST	0.00	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.54
TOTAL NOX EMISSION	0.00	1.00	1.00	0.08	0.33	0.41	1.46	1.87	0.93	0.07	8.76

PARTICULATE MATTER EMISSIONS											
EXHAUST	0.00	0.01	0.01	0.00	0.01	0.01	0.13	0.14	0.09	0.00	0.33
TIRE-WEAR	0.00	0.10	0.10	0.00	0.03	0.04	0.08	0.12	0.03	0.01	2.21
TOTAL PM EMISSION	0.00	0.11	0.11	0.01	0.04	0.05	0.21	0.26	0.12	0.01	2.54
LEAD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OXIDES - SULFUR	0.00	0.05	0.05	0.01	0.02	0.03	0.06	0.09	0.02	0.00	0.60
FUEL CONSUMED IN 1000 GALLONS											
GASOLINE	0.00	39.33	39.33	2.20	16.89	19.10		19.10		1.32	377.54
DIESEL							17.22	17.22	6.16		23.50

CONVERSION OF EMFAC7F/BURDEN7F DATA FOR CALINE4

Year 1999
County San Francisco
Trip length 6.4

Vehicle Type	County VMTx1000	Percent VMT	Emission factors (g/mile) @ mph 5	10	15	20	25	Cold Start Adjustment (g/trip)	(g/mi)
NCAT Auto	100	1.10	289.97	144.08	96.54	74.41	60.55	124.63	10.92
CAT Auto	6,950	76.15	10.25	5.79	3.98	3.09	2.58	90.62	7.94
Diesel Auto	23	0.25	4.98	3.44	2.48	1.87	1.48	7.43	0.65
NCAT LDT	4	0.04	168.70	84.04	55.83	41.84	33.47	69.11	6.06
CAT LDT	1,245	13.64	13.11	7.23	4.99	3.94	3.34	121.32	10.63
Diesel LDT	5	0.05	4.79	3.30	2.38	1.80	1.42	5.81	0.51
NCAT MDT	6	0.07	226.58	116.86	82.68	65.45	52.89	57.04	5.00
CAT MDT	435	4.77	12.44	6.88	4.74	3.74	3.17	143.50	12.58
NCAT HDT	24	0.26	208.03	138.40	97.29	72.25	56.69	0.00	0.00
CAT HDT	90	0.99	31.32	20.84	14.65	10.88	8.54	0.00	0.00
Diesel HDT	126	1.38	36.31	25.04	18.07	13.65	10.79	0.00	0.00
Bus	43	0.47	67.23	46.36	33.45	25.26	19.97	0.00	0.00
Motorcycle	76	0.83	52.98	25.47	16.73	12.83	10.50	107.50	9.42
SUM	9,127	100							
Composite Factors			15.72	8.77	6.03	4.66	3.85		8.30
Composite Cold Start				8.30	8.30	8.30	8.30		
Total g/mi				17.08	14.33	12.97	12.16		

County VMT from BURDEN7F
Emission factors from EMFAC7F
Cold start adjustment: g/trip*(3.59/trip length)/trip length
Idle emission factor: g/mi @ 5 mph * 5 mph/60 min/hr

Idle Emission Factor (g/v-min) 1.31

1 PREDICTED CALIFORNIA VEHICLE EMISSIONS RUNDATE: 03/13/96

CARBON MONOXIDE PLANNING INVENTORY

YEAR: 1999 SAN FRANCISCO COUNTY EMISSION UNIT: TONS PER DAY

E7F/B7F/V1.1 /DAILY EMISSIONS SAN FRANCISCO AIR BASIN I AND M PROGRAM IN EFFECT

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	LIGHT DUTY PASSENGERS				LIGHT DUTY TRUCKS			
	NON-CAT	CAT	DIESEL	TOTAL	NON-CAT	CAT	DIESEL	TOTAL
NO. OF IN USE VEHS	8876	295489	1714	306079	445	53418	391	54254
DAILY VMT (X 1000)	100	6950	23	7073	4	1245	5	1254
NO. OF HOT TRIPS	9616	442711	1487	453814	269	52410	205	52884
NO. OF COLD TRIPS	6686	685203	2302	694191	188	81116	318	81622
NO. OF DAILY TRIPS	16302	1127914	3789	1148005	457	133526	523	134506
TOTAL ORGANIC GAS EMISSIONS								
RUNNING EXHAUST	1.00	1.89	0.01	2.90	0.02	0.47	0.00	0.49
COLD START EXHAUST	0.32	5.35	0.00	5.67	0.01	0.78	0.00	0.79
HOT START EXHAUST	0.19	0.26	0.00	0.45	0.00	0.04	0.00	0.04
TOTAL EXHAUST	1.51	7.49	0.01	9.02	0.03	1.29	0.00	1.33
DIURNAL EVAPORATION	0.04	0.36	0.00	0.41	0.00	0.07	0.00	0.07
HOT SOAK EVAPORATION	0.19	0.78	0.00	0.96	0.00	0.10	0.00	0.10
RUNNING LOSSES	0.18	1.92	0.00	2.10	0.01	0.33	0.00	0.33
RESTING LOSSES	0.02	0.47	0.00	0.49	0.00	0.09	0.00	0.09
TOTAL TOG EMISSION	1.94	11.01	0.01	12.97	0.05	1.88	0.00	1.93

REACTIVE ORGANIC GAS EMISSIONS								
RUNNING EXHAUST	0.92	1.61	0.01	2.55	0.02	0.40	0.00	0.43
COLD START EXHAUST	0.29	4.58	0.00	4.88	0.01	0.67	0.00	0.68
HOT START EXHAUST	0.18	0.22	0.00	0.40	0.00	0.03	0.00	0.04
TOTAL EXHAUST	1.39	6.41	0.01	7.82	0.03	1.11	0.00	1.14
DIURNAL EVAPORATION	0.04	0.36	0.00	0.41	0.00	0.07	0.00	0.07
HOT SOAK EVAPORATION	0.19	0.78	0.00	0.96	0.00	0.10	0.00	0.10
RUNNING LOSSES	0.18	1.92	0.00	2.10	0.01	0.33	0.00	0.33
RESTING LOSSES	0.02	0.47	0.00	0.49	0.00	0.09	0.00	0.09
TOTAL ROG EMISSION	1.82	9.94	0.01	11.77	0.05	1.69	0.00	1.74
CARBON MONOXIDE EMISSIONS								
RUNNING EXHAUST	7.60	23.33	0.05	30.98	0.18	5.28	0.01	5.48
COLD START EXHAUST	0.92	61.30	0.02	62.24	0.02	9.70	0.00	9.72
HOT START EXHAUST	0.38	4.32	0.01	4.71	0.01	0.66	0.00	0.67
TOTAL CO EMISSION	8.90	88.96	0.07	97.93	0.20	15.64	0.01	15.86
OXIDES OF NITROGEN EMISSIONS								
RUNNING EXHAUST	0.34	4.12	0.04	4.50	0.01	1.09	0.01	1.11
COLD START EXHAUST	0.04	1.69	0.00	1.72	0.00	0.27	0.00	0.27
HOT START EXHAUST	0.07	0.64	0.00	0.71	0.00	0.10	0.00	0.11
TOTAL NOX EMISSION	0.44	6.45	0.04	6.93	0.02	1.46	0.01	1.48
PARTICULATE MATTER EMISSIONS								
EXHAUST	0.00	0.08	0.01	0.09	0.00	0.01	0.00	0.02
TIRE-WEAR	0.02	1.53	0.01	1.56	0.00	0.27	0.00	0.28
TOTAL PM EMISSION	0.03	1.61	0.02	1.65	0.00	0.29	0.00	0.29

LEAD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OXIDES - SULFUR	0.02	0.36	0.00	0.38	0.00	0.08	0.00	0.09
			FUEL CONSUMED IN 1000 GALLONS					
GASOLINE	8.28	262.16		270.44	0.35	62.09		62.45
DIESEL			0.77	0.77			0.18	0.18

1 PREDICTED CALIFORNIA VEHICLE EMISSIONS RUNDATE: 03/13/96

CARBON MONOXIDE PLANNING INVENTORY

YEAR: 1999 SAN FRANCISCO COUNTY EMISSION UNIT: TONS PER DAY

E7F/B7F/V1.1 /DAILY EMISSIONS SAN FRANCISCO AIR BASIN I AND M PROGRAM IN EFFECT

O - - - H E A V Y D U T Y T R U C K S - - -

	MEDIUM DUTY TRUCKS			----- GASOLINE TRUCKS -----			DIESEL	TOTAL HD	URBAN	MOTOR-	ALL
	NON-CAT	CAT	TOTAL	NON-CAT	CAT	TOTAL	TRUCKS	TRUCKS	BUSES	CYCLES	VEHICLES
NO. OF IN USE VEHS	764	18344	19108	2970	5813	8783	2967	11750	386	17960	409537
DAILY VMT (X 1000)	6	435	441	24	90	114	126	240	43	76	9127
NO. OF HOT TRIPS	405	18166	18571	10695	25994	36689	0	36689	0	6061	568019
NO. OF COLD TRIPS	281	28117	28398	6987	39612	46599	0	46599	0	4214	855024
NO. OF DAILY TRIPS	686	46283	46969	17682	65606	83288	0	83288	0	10275	1423043
TOTAL ORGANIC GAS EMISSIONS											
RUNNING EXHAUST	0.05	0.27	0.32	0.11	0.10	0.21	0.41	0.62	0.24	0.23	4.81
COLD START EXHAUST	0.01	0.36	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.09	6.92
HOT START EXHAUST	0.01	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.54
TOTAL EXHAUST	0.07	0.65	0.72	0.11	0.10	0.21	0.41	0.62	0.24	0.34	12.26
DIURNAL EVAPORATION	0.00	0.02	0.03	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.52
HOT SOAK EVAPORATION	0.01	0.03	0.03	0.03	0.07	0.10	0.00	0.10	0.00	0.01	1.21
RUNNING LOSSES	0.01	0.09	0.10	0.02	0.01	0.03	0.00	0.03	0.00	0.00	2.56
RESTING LOSSES	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61
TOTAL TOG EMISSION	0.09	0.82	0.91	0.16	0.18	0.35	0.41	0.76	0.24	0.35	17.15

REACTIVE ORGANIC GAS EMISSIONS

RUNNING EXHAUST	0.05	0.23	0.28	0.10	0.09	0.19	0.40	0.59	0.24	0.22	4.29
COLD START EXHAUST	0.01	0.30	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.08	5.95
HOT START EXHAUST	0.01	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.47
TOTAL EXHAUST	0.06	0.56	0.62	0.10	0.09	0.19	0.40	0.59	0.24	0.31	10.71
DIURNAL EVAPORATION	0.00	0.02	0.03	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.52
HOT SOAK EVAPORATION	0.01	0.03	0.03	0.03	0.07	0.10	0.00	0.10	0.00	0.01	1.21
RUNNING LOSSES	0.01	0.09	0.10	0.02	0.01	0.03	0.00	0.03	0.00	0.00	2.56
RESTING LOSSES	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61
TOTAL ROG EMISSION	0.09	0.72	0.81	0.16	0.17	0.33	0.40	0.73	0.24	0.32	15.61

CARBON MONOXIDE EMISSIONS

RUNNING EXHAUST	0.41	1.76	2.18	1.82	1.01	2.82	1.84	4.66	1.17	1.05	45.51
COLD START EXHAUST	0.02	3.99	4.01	0.00	0.00	0.00	0.00	0.00	0.00	0.47	76.43
HOT START EXHAUST	0.01	0.21	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.03	5.64
TOTAL CO EMISSION	0.45	5.96	6.41	1.82	1.01	2.82	1.84	4.66	1.17	1.55	127.58

OXIDES OF NITROGEN EMISSIONS

RUNNING EXHAUST	0.02	0.70	0.72	0.18	0.35	0.53	1.68	2.21	0.96	0.08	9.58
COLD START EXHAUST	0.00	0.16	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.15
HOT START EXHAUST	0.00	0.06	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88
TOTAL NOX EMISSION	0.02	0.92	0.95	0.18	0.35	0.53	1.68	2.21	0.96	0.08	12.61

PARTICULATE MATTER EMISSIONS											
EXHAUST	0.00	0.00	0.01	0.00	0.01	0.01	0.18	0.19	0.12	0.00	0.42
TIRE-WEAR	0.00	0.10	0.10	0.01	0.03	0.04	0.09	0.13	0.03	0.01	2.10
TOTAL PM EMISSION	0.00	0.10	0.10	0.01	0.04	0.05	0.27	0.32	0.15	0.01	2.52
LEAD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OXIDES - SULFUR	0.00	0.05	0.05	0.01	0.02	0.03	0.07	0.11	0.03	0.00	0.65
FUEL CONSUMED IN 1000 GALLONS											
GASOLINE	0.66	37.86	38.52	4.33	15.93	20.25		20.25		1.53	393.18
DIESEL							20.75	20.75	7.26		28.96

INTERSECTION NAME: Van Ness & Hayes
SCENARIO: PM Peak-Existing

INPUT DATA

Average Light Cycle Time (all directions): 58

NORTHBOUND:

Average green time -	26			
Number of exit lanes -	3			
Average vehicle speed -	25			
Traffic	Left	Thru	Right	
Volumes -	264	1715	0	

SOUTHBOUND:

Average green time -	26		
Number of exit lanes -	3		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	0	1325	65

EASTBOUND:

Average green time -	27		
Number of exit lanes -	0		
Average vehicle speed -	10		
Traffic	Left	Thru	Right
Volumes -	0	0	0

WESTBOUND:

Average green time -	32		
Number of exit lanes -	3		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	0	1304	179

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1979
Vehicles/Lane/Cycle -	10.2
Vehicles Delayed/ln/cy -	5.6
Departure Volume -	1894
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	197

SOUTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1390
Vehicles/Lane/Cycle -	7.1
Vehicles Delayed/ln/cy -	3.9
Departure Volume -	1325
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	158

EASTBOUND:

Deceleration -	1.9
Acceleration -	3.0
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	31
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1483
Vehicles/Lane/Cycle -	8.8
Vehicles Delayed/ln/cy -	3.9
Departure Volume -	1633
First Vehicle Idle Time -	26
Last Vehicle Idle Time -	0
Min. stopline distance -	158

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: Van Ness & Hayes
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. Van Ness - N	0	0	-130	1000	IN	1979	14.3	.0	50.0
B. Van Ness - S	-163	1000	-33	0	IN	1390	14.3	.0	50.0
C. Hayes - WB	400	580	-560	460	IN	1483	14.3	.0	50.0

LINK	MIXW L (FT)	MIXW R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	510	5.	8.	25.	10	6	1894	1.30	32.	0.
B.	0.	0.	470	5.	8.	25.	7	4	1325	1.30	32.	0.
C.	0.	0.	455	5.	8.	25.	9	4	1633	1.30	26.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	-160	465	5.0

JOB: Van Ness & Hayes
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	68.	15.0	3.0	1.6	3.5

INTERSECTION NAME: Van Ness & Hayes
SCENARIO: PM Peak-Existing+Project

INPUT DATA

Average Light Cycle Time (all directions): 58

NORTHBOUND:

Average green time -	26			Average green time -		26	
Number of exit lanes -	3			Number of exit lanes -		3	
Average vehicle speed -	25			Average vehicle speed -		25	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	271	1729	0	Volumes -	0	1325	65

EASTBOUND:

Average green time -	27			Average green time -		32	
Number of exit lanes -	0			Number of exit lanes -		3	
Average vehicle speed -	25			Average vehicle speed -		25	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	0	0	0	Volumes	2	1307	179

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	2000
Vehicles/Lane/Cycle -	10.2
Vehicles Delayed/ln/cy -	5.7
Departure Volume -	1908
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	198

SOUTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1390
Vehicles/Lane/Cycle -	7.1
Vehicles Delayed/ln/cy -	3.9
Departure Volume -	1327
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	158

EASTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	31
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1488
Vehicles/Lane/Cycle -	8.8
Vehicles Delayed/ln/cy -	4.0
Departure Volume -	1643
First Vehicle Idle Time -	28
Last Vehicle Idle Time -	0
Min. stopline distance -	159

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: Van Ness & Hayes
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. Van Ness - N	0	0	-130	1000	IN	2000	14.3	.0	50.0
B. Van Ness - S	-163	1000	-33	0	IN	1390	14.3	.0	50.0
C. Hayes - WB	400	580	-560	460	IN	1488	14.3	.0	50.0

LINK	MIXW L (FT)	MIXW R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	510	5.	8.	25.	10	6	1908	1.30	32.	0.
B.	0.	0.	470	5.	8.	25.	7	4	1327	1.30	32.	0.
C.	0.	0.	455	5.	8.	25.	9	4	1643	1.30	26.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	-160	465	5.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: Van Ness & Hayes
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	68.	15.1	3.0	1.6	3.5

10.4

INTERSECTION NAME: Van Ness & Hayes
SCENARIO: PM Peak-2010+State Bldg+Project

INPUT DATA

Average Light Cycle Time (all directions): 58

NORTHBOUND:

Average green time -	26		
Number of exit lanes -	3		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	299	1914	0

SOUTHBOUND:

Average green time -	26		
Number of exit lanes -	3		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	0	1513	72

EASTBOUND:

Average green time -	30		
Number of exit lanes -	0		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	0	0	0

WESTBOUND:

Average green time -	32		
Number of exit lanes -	3		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes	2	1447	198

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	2213
Vehicles/Lane/Cycle -	11.3
Vehicles Delayed/ln/cy -	6.3
Departure Volume -	2112
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	212

SOUTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1585
Vehicles/Lane/Cycle -	8.1
Vehicles Delayed/ln/cy -	4.5
Departure Volume -	1515
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	171

EASTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	28
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1647
Vehicles/Lane/Cycle -	9.8
Vehicles Delayed/ln/cy -	4.4
Departure Volume -	1818
First Vehicle Idle Time -	26
Last Vehicle Idle Time -	0
Min. stopline distance -	169

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: Van Ness & Hayes
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	~~7.0~~ PPM 5.2		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. Van Ness - N	*	0	0	-130	1000	* IN	2213	6.3	.0	50.0
B. Van Ness - S	*	-163	1000	-33	0	* IN	1585	6.3	.0	50.0
C. Hayes - WB	*	400	580	-560	460	* IN	1647	6.3	.0	50.0

LINK	*	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	*	0.	0.	510	5.	8.	25.	11	6	2112	.70	32.	0.
B.	*	0.	0.	470	5.	8.	25.	8	5	1515	.70	32.	0.
C.	*	0.	0.	455	5.	8.	25.	10	5	1818	.70	26.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z
1. RECPT 1	*	-160	465	5.0

JOB: Van Ness & Hayes
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	68.	~~11.0~~ 9.2	1.4	.7	1.8

6.3

INTERSECTION NAME: Van Ness & Mission
SCENARIO: PM Peak-Existing

INPUT DATA

Average Light Cycle Time (all directions): 88

NORTHBOUND:

Average green time -	26			SOUTHBOUND: Average green time -		26	
Number of exit lanes -	3			Number of exit lanes -		3	
Average vehicle speed -	25			Average vehicle speed -		25	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	30	839	89	Volumes -	14	1014	300

EASTBOUND:

Average green time -	20			WESTBOUND: Average green time -		20	
Number of exit lanes -	2			Number of exit lanes -		4	
Average vehicle speed -	25			Average vehicle speed -		25	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	1062	254	1	Volumes	22	772	221

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	958
Vehicles/Lane/Cycle -	17.3
Vehicles Delayed/ln/cy -	12.2
Departure Volume -	2122
First Vehicle Idle Time -	62
Last Vehicle Idle Time -	67
Min. stopline distance -	348

SOUTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1328
Vehicles/Lane/Cycle -	8.4
Vehicles Delayed/ln/cy -	6.0
Departure Volume -	1037
First Vehicle Idle Time -	62
Last Vehicle Idle Time -	0
Min. stopline distance -	205

EASTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1317
Vehicles/Lane/Cycle -	4.4
Vehicles Delayed/ln/cy -	3.4
Departure Volume -	357
First Vehicle Idle Time -	68
Last Vehicle Idle Time -	0
Min. stopline distance -	145

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1015
Vehicles/Lane/Cycle -	6.7
Vehicles Delayed/ln/cy -	5.2
Departure Volume -	1102
First Vehicle Idle Time -	68
Last Vehicle Idle Time -	0
Min. stopline distance -	188

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: Van Ness & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. Van Ness - N	0	0	-160	1000	IN	958	14.3	.0	50.0
B. Van Ness - S	-193	1000	-33	0	IN	1328	14.3	.0	50.0
C. Mission - EB	-400	225	230	800	IN	1317	14.3	.0	40.0
D. Mission - WB	210	800	-200	440	IN	1015	14.3	.0	40.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	495	5.	8.	25.	17	12	2122	1.30	62.	67.
B.	0.	0.	480	5.	8.	25.	9	6	1037	1.30	62.	0.
C.	0.	0.	370	5.	8.	25.	4	3	357	1.30	68.	0.
D.	0.	0.	360	5.	8.	25.	7	5	1102	1.30	68.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	30	570	5.0

JOB: Van Ness & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D
1. RECPT 1	270.	14.7	.7	2.5	.2	4.4

10.1

INTERSECTION NAME: Van Ness & Mission
SCENARIO: PM Peak-Existing+Project

INPUT DATA

Average Light Cycle Time (all directions): 88

NORTHBOUND:				SOUTHBOUND:			
Average green time -	26			Average green time -		26	
Number of exit lanes -	3			Number of exit lanes -		3	
Average vehicle speed -	25			Average vehicle speed -		25	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	30	840	90	Volumes -	14	1014	301

EASTBOUND:				WESTBOUND:			
Average green time -	20			Average green time -		20	
Number of exit lanes -	2			Number of exit lanes -		4	
Average vehicle speed -	25			Average vehicle speed -		25	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	1063	254	1	Volumes	31	786	241

OUTPUT DATA

NORTHBOUND:	
Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	960
Vehicles/Lane/Cycle -	17.5
Vehicles Delayed/ln/cy -	12.3
Departure Volume -	2144
First Vehicle Idle Time -	62
Last Vehicle Idle Time -	67
Min. stopline distance -	351

SOUTHBOUND:	
Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1329
Vehicles/Lane/Cycle -	8.5
Vehicles Delayed/ln/cy -	6.0
Departure Volume -	1046
First Vehicle Idle Time -	62
Last Vehicle Idle Time -	0
Min. stopline distance -	206

EASTBOUND:	
Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1318
Vehicles/Lane/Cycle -	4.4
Vehicles Delayed/ln/cy -	3.4
Departure Volume -	358
First Vehicle Idle Time -	68
Last Vehicle Idle Time -	0
Min. stopline distance -	146

WESTBOUND:	
Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1058
Vehicles/Lane/Cycle -	6.8
Vehicles Delayed/ln/cy -	5.3
Departure Volume -	1117
First Vehicle Idle Time -	68
Last Vehicle Idle Time -	0
Min. stopline distance -	189

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: Van Ness & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. Van Ness - N	0	0	-160	1000	IN	960	14.3	.0	50.0
B. Van Ness - S	-193	1000	-33	0	IN	1329	14.3	.0	50.0
C. Mission - EB	-400	225	230	800	IN	1318	14.3	.0	40.0
D. Mission - WB	210	800	-200	440	IN	1058	14.3	.0	40.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	495	5.	8.	25.	18	12	2144	1.30	62.	67.
B.	0.	0.	480	5.	8.	25.	9	6	1046	1.30	62.	0.
C.	0.	0.	370	5.	8.	25.	4	3	358	1.30	68.	0.
D.	0.	0.	360	5.	8.	25.	7	5	1117	1.30	68.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	30	570	5.0

JOB: Van Ness & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D
1. RECPT 1	271.	14.9	.6	2.4	.2	4.6

INTERSECTION NAME: Van Ness & Mission
SCENARIO: PM Peak-2010+State Bldg+Project

INPUT DATA

Average Light Cycle Time (all directions): 88

NORTHBOUND:

Average green time -	26			Average green time -		26		
Number of exit lanes -	3			Number of exit lanes -		3		
Average vehicle speed -	25			Average vehicle speed -		25		
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right	
Volumes -	35	975	104	Volumes -	16	1206	381	

EASTBOUND:

Average green time -	20			Average green time -		20		
Number of exit lanes -	2			Number of exit lanes -		4		
Average vehicle speed -	20			Average vehicle speed -		20		
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right	
Volumes -	1235	295	1	Volumes	35	910	277	

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1114
Vehicles/Lane/Cycle -	20.3
Vehicles Delayed/In/cy -	14.3
Departure Volume -	2487
First Vehicle Idle Time -	62
Last Vehicle Idle Time -	67
Min. stopline distance -	396

SOUTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1583
Vehicles/Lane/Cycle -	10.1
Vehicles Delayed/In/cy -	7.1
Departure Volume -	1242
First Vehicle Idle Time -	62
Last Vehicle Idle Time -	0
Min. stopline distance -	232

EASTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	1531
Vehicles/Lane/Cycle -	5.1
Vehicles Delayed/In/cy -	3.9
Departure Volume -	415
First Vehicle Idle Time -	68
Last Vehicle Idle Time -	0
Min. stopline distance -	134

WESTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	1222
Vehicles/Lane/Cycle -	8.0
Vehicles Delayed/In/cy -	6.2
Departure Volume -	1306
First Vehicle Idle Time -	68
Last Vehicle Idle Time -	0
Min. stopline distance -	185

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: Van Ness & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	5.2 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. Van Ness - N	0	0	-160	1000	IN	1114	6.3	.0	50.0
B. Van Ness - S	-193	1000	-33	0	IN	1583	6.3	.0	50.0
C. Mission - EB	-400	225	230	800	IN	1531	6.3	.0	40.0
D. Mission - WB	210	800	-200	440	IN	1222	6.3	.0	40.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	495	5.	8.	25.	20	14	2487	.70	62.	67.
B.	0.	0.	480	5.	8.	25.	10	7	1242	.70	62.	0.
C.	0.	0.	370	4.	6.	20.	5	4	415	.70	68.	0.
D.	0.	0.	360	4.	6.	20.	8	6	1306	.70	68.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	30	570	5.0

JOB: Van Ness & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D
1. RECPT 1	274.	8.7	.3	1.3	.0	1.9

6.0

INTERSECTION NAME: 11th & Mission
SCENARIO: PM Peak-Existing

INPUT DATA

Average Light Cycle Time (all directions): 62

NORTHBOUND:

Average green time -	20		
Number of exit lanes -	1		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	245	133	76

SOUTHBOUND:

Average green time -	20		
Number of exit lanes -	1		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	50	115	110

EASTBOUND:

Average green time -	35		
Number of exit lanes -	2		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	0	296	47

WESTBOUND:

Average green time -	35		
Number of exit lanes -	1		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes	0	806	99

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	454
Vehicles/Lane/Cycle -	4.0
Vehicles Delayed/ln/cy -	2.7
Departure Volume -	232
First Vehicle Idle Time -	42
Last Vehicle Idle Time -	0
Min. stopline distance -	130

SOUTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	275
Vehicles/Lane/Cycle -	2.8
Vehicles Delayed/ln/cy -	1.9
Departure Volume -	162
First Vehicle Idle Time -	42
Last Vehicle Idle Time -	0
Min. stopline distance -	111

EASTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	343
Vehicles/Lane/Cycle -	3.6
Vehicles Delayed/ln/cy -	1.6
Departure Volume -	422
First Vehicle Idle Time -	27
Last Vehicle Idle Time -	0
Min. stopline distance -	104

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	905
Vehicles/Lane/Cycle -	20.0
Vehicles Delayed/ln/cy -	8.7
Departure Volume -	1161
First Vehicle Idle Time -	27
Last Vehicle Idle Time -	0
Min. stopline distance -	268

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 11th & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 11th - NB	*	860	0	0	850	* IN	454	14.3	.0	35.0
B. 11th - SB	*	0	830	840	0	* IN	275	14.3	.0	35.0
C. Mission - EB	*	0	0	920	840	* IN	343	14.3	.0	35.0
D. Mission - WB	*	900	840	-20	0	* IN	905	14.3	.0	35.0

LINK	*	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	*	0.	0.	560	5.	8.	25.	4	3	232	1.30	42.	0.
B.	*	0.	0.	575	5.	8.	25.	3	2	162	1.30	42.	0.
C.	*	0.	0.	560	5.	8.	25.	4	2	422	1.30	27.	0.
D.	*	0.	0.	605	5.	8.	25.	20	9	1161	1.30	27.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z
1. RECPT 1	*	360	400	5.0

JOB: 11th & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D
1. RECPT 1	62.	10.9	.4	1.1	.3	2.1

7.4

INTERSECTION NAME: 11th Street & Mission
SCENARIO: PM Peak-Existing+Project

INPUT DATA

Average Light Cycle Time (all directions): 62

NORTHBOUND:

Average green time -	20			Average green time -			20	
Number of exit lanes -	1			Number of exit lanes -			1	
Average vehicle speed -	25			Average vehicle speed -			25	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right	
Volumes -	245	134	78	Volumes -	50	115	110	

EASTBOUND:

Average green time -	35			Average green time -			35	
Number of exit lanes -	2			Number of exit lanes -			1	
Average vehicle speed -	25			Average vehicle speed -			25	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right	
Volumes -	0	297	49	Volumes	0	841	111	

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	455
Vehicles/Lane/Cycle -	4.2
Vehicles Delayed/ln/cy -	2.9
Departure Volume -	245
First Vehicle Idle Time -	42
Last Vehicle Idle Time -	0
Min. stopline distance -	134

SOUTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	275
Vehicles/Lane/Cycle -	2.8
Vehicles Delayed/ln/cy -	1.9
Departure Volume -	164
First Vehicle Idle Time -	42
Last Vehicle Idle Time -	0
Min. stopline distance -	112

EASTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	346
Vehicles/Lane/Cycle -	3.6
Vehicles Delayed/ln/cy -	1.6
Departure Volume -	423
First Vehicle Idle Time -	27
Last Vehicle Idle Time -	0
Min. stopline distance -	104

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	952
Vehicles/Lane/Cycle -	20.6
Vehicles Delayed/ln/cy -	9.0
Departure Volume -	1196
First Vehicle Idle Time -	27
Last Vehicle Idle Time -	0
Min. stopline distance -	274

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 11th & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 11th - NB	860	0	0	850	IN	455	14.3	.0	35.0
B. 11th - SB	0	830	840	0	IN	275	14.3	.0	35.0
C. Mission - EB	0	0	920	840	IN	346	14.3	.0	35.0
D. Mission - WB	900	840	-20	0	IN	952	14.3	.0	35.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	560	5.	8.	25.	4	3	245	1.30	42.	0.
B.	0.	0.	575	5.	8.	25.	3	2	164	1.30	42.	0.
C.	0.	0.	560	5.	8.	25.	4	2	423	1.30	27.	0.
D.	0.	0.	605	5.	8.	25.	21	9	1196	1.30	27.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	360	400	5.0

JOB: 11th & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D
1. RECPT 1	62.	10.9	.4	1.1	.3	2.1

74

INTERSECTION NAME: 11th Street & Mission
SCENARIO: PM Peak-2010+State Bldg+Project

INPUT DATA

Average Light Cycle Time (all directions): 62

NORTHBOUND:

Average green time -	20		
Number of exit lanes -	1		
Average vehicle speed -	20		
Traffic Volumes -	Left 284	Thru 155	Right 88

SOUTHBOUND:

Average green time -	20		
Number of exit lanes -	1		
Average vehicle speed -	20		
Traffic Volumes -	Left 58	Thru 134	Right 128

EASTBOUND:

Average green time -	35		
Number of exit lanes -	2		
Average vehicle speed -	20		
Traffic Volumes -	Left 0	Thru 345	Right 57

WESTBOUND:

Average green time -	35		
Number of exit lanes -	1		
Average vehicle speed -	20		
Traffic Volumes	Left 0	Thru 971	Right 127

OUTPUT DATA

NORTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	527
Vehicles/Lane/Cycle -	4.9
Vehicles Delayed/ln/cy -	3.3
Departure Volume -	282
First Vehicle Idle Time -	42
Last Vehicle Idle Time -	0
Min. stopline distance -	119

SOUTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	320
Vehicles/Lane/Cycle -	3.3
Vehicles Delayed/ln/cy -	2.2
Departure Volume -	191
First Vehicle Idle Time -	42
Last Vehicle Idle Time -	0
Min. stopline distance -	95

EASTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	402
Vehicles/Lane/Cycle -	4.2
Vehicles Delayed/ln/cy -	1.8
Departure Volume -	491
First Vehicle Idle Time -	27
Last Vehicle Idle Time -	0
Min. stopline distance -	86

WESTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	1098
Vehicles/Lane/Cycle -	23.8
Vehicles Delayed/ln/cy -	10.4
Departure Volume -	1383
First Vehicle Idle Time -	27
Last Vehicle Idle Time -	0
Min. stopline distance -	282

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 11th & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	5.2 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 11th - NB	860	0	0	850	IN	527	6.3	.0	35.0
B. 11th - SB	0	830	840	0	IN	320	6.3	.0	35.0
C. Mission - EB	0	0	920	840	IN	402	6.3	.0	35.0
D. Mission - WB	900	840	-20	0	IN	1098	6.3	.0	35.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	560	4.	6.	20.	5	3	282	.70	42.	0.
B.	0.	0.	575	4.	6.	20.	3	2	191	.70	42.	0.
C.	0.	0.	560	4.	6.	20.	4	2	491	.70	27.	0.
D.	0.	0.	605	4.	6.	20.	24	10	1383	.70	27.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	360	400	5.0

JOB: 11th & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D
1. RECPT 1	59.	6.6	.0	.5	.1	.7

4.5

INTERSECTION NAME: 10th & Mission
SCENARIO: PM Peak-Existing

INPUT DATA

Average Light Cycle Time (all directions): 57

NORTHBOUND:

Average green time -	27		
Number of exit lanes -	0		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	0	0	0

SOUTHBOUND:

Average green time -	27		
Number of exit lanes -	4		
Average vehicle speed -	20		
Traffic	Left	Thru	Right
Volumes -	162	1622	209

EASTBOUND:

Average green time -	27		
Number of exit lanes -	1		
Average vehicle speed -	20		
Traffic	Left	Thru	Right
Volumes -	0	371	153

WESTBOUND:

Average green time -	27		
Number of exit lanes -	2		
Average vehicle speed -	20		
Traffic	Left	Thru	Right
Volumes	189	581	0

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

SOUTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	1993
Vehicles/Lane/Cycle -	7.8
Vehicles Delayed/ln/cy -	4.1
Departure Volume -	1964
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	0
Min. stopline distance -	138

EASTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	524
Vehicles/Lane/Cycle -	8.4
Vehicles Delayed/ln/cy -	4.4
Departure Volume -	533
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	0
Min. stopline distance -	146

WESTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	770
Vehicles/Lane/Cycle -	6.3
Vehicles Delayed/ln/cy -	3.3
Departure Volume -	790
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	0
Min. stopline distance -	119

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 10th & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 10th - SB	0	840	840	0	IN	1993	14.3	.0	60.0
B. Mission - EB	0	0	920	840	IN	524	14.3	.0	35.0
C. Mission - WB	900	840	-20	0	IN	770	14.3	.0	40.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	575	4.	6.	20.	8	4	1964	1.30	30.	0.
B.	0.	0.	560	4.	6.	20.	8	4	533	1.30	30.	0.
C.	0.	0.	595	4.	6.	20.	6	3	790	1.30	30.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	340	420	5.0

JOB: 10th & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	69.	12.5	4.1	.2	1.2

8.6

INTERSECTION NAME: 10th Street & Mission
SCENARIO: PM Peak-Existing+Project

INPUT DATA

Average Light Cycle Time (all directions): 57

NORTHBOUND:

Average green time -	27		
Number of exit lanes -	0		
Average vehicle speed -	25		
Traffic Volumes -	Left 0	Thru 0	Right 0

SOUTHBOUND:

Average green time -	27		
Number of exit lanes -	4		
Average vehicle speed -	20		
Traffic Volumes -	Left 169	Thru 1689	Right 252

EASTBOUND:

Average green time -	27		
Number of exit lanes -	1		
Average vehicle speed -	20		
Traffic Volumes -	Left 0	Thru 372	Right 153

WESTBOUND:

Average green time -	27		
Number of exit lanes -	2		
Average vehicle speed -	20		
Traffic Volumes	Left 193	Thru 585	Right 0

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

SOUTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	2110
Vehicles/Lane/Cycle -	8.1
Vehicles Delayed/ln/cy -	4.2
Departure Volume -	2035
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	0
Min. stopline distance -	141

EASTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	525
Vehicles/Lane/Cycle -	8.6
Vehicles Delayed/ln/cy -	4.5
Departure Volume -	541
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	0
Min. stopline distance -	147

WESTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	778
Vehicles/Lane/Cycle -	6.6
Vehicles Delayed/ln/cy -	3.5
Departure Volume -	837
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	0
Min. stopline distance -	124

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 10th & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 10th - SB	0	840	840	0	IN	2110	14.3	.0	60.0
B. Mission - EB	0	0	920	840	IN	525	14.3	.0	35.0
C. Mission - WB	900	840	-20	0	IN	778	14.3	.0	40.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	575	4.	6.	20.	8	4	2035	1.30	30.	0.
B.	0.	0.	560	4.	6.	20.	9	5	541	1.30	30.	0.
C.	0.	0.	595	4.	6.	20.	7	4	837	1.30	30.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	340	420	5.0

JOB: 10th & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	69.	12.9	4.4	.2	1.3

INTERSECTION NAME: 10th Street & Mission
SCENARIO: PM Peak-2010+State Bldg+Project

INPUT DATA

Average Light Cycle Time (all directions): 57

NORTHBOUND:

Average green time -	27		
Number of exit lanes -	0		
Average vehicle speed -	20		
Traffic Volumes -	Left 0	Thru 0	Right 0

SOUTHBOUND:

Average green time -	27		
Number of exit lanes -	4		
Average vehicle speed -	15		
Traffic Volumes -	Left 195	Thru 1950	Right 286

EASTBOUND:

Average green time -	27		
Number of exit lanes -	1		
Average vehicle speed -	15		
Traffic Volumes -	Left 0	Thru 432	Right 178

WESTBOUND:

Average green time -	27		
Number of exit lanes -	2		
Average vehicle speed -	15		
Traffic Volumes	Left 223	Thru 679	Right 0

OUTPUT DATA

NORTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

SOUTHBOUND:

Deceleration -	2.8
Acceleration -	4.5
Approach, VPH -	2431
Vehicles/Lane/Cycle -	9.3
Vehicles Delayed/ln/cy -	4.9
Departure Volume -	2351
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	0
Min. stopline distance -	134

EASTBOUND:

Deceleration -	2.8
Acceleration -	4.5
Approach, VPH -	610
Vehicles/Lane/Cycle -	9.9
Vehicles Delayed/ln/cy -	5.2
Departure Volume -	627
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	0
Min. stopline distance -	141

WESTBOUND:

Deceleration -	2.8
Acceleration -	4.5
Approach, VPH -	902
Vehicles/Lane/Cycle -	7.6
Vehicles Delayed/ln/cy -	4.0
Departure Volume -	965
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	0
Min. stopline distance -	114

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 10th & Mission
RUN: 2010+Project . (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	5.2 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 10th - SB	0	840	840	0	IN	2431	6.3	.0	60.0
B. Mission - EB	0	0	920	840	IN	610	6.3	.0	35.0
C. Mission - WB	900	840	-20	0	IN	902	6.3	.0	40.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	575	3.	5.	15.	9	5	2351	.70	30.	0.
B.	0.	0.	560	3.	5.	15.	10	5	627	.70	30.	0.
C.	0.	0.	595	3.	5.	15.	8	4	965	.70	30.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	340	420	5.0

JOB: 10th & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	68.	7.5	1.7	.1	.5

5.1

INTERSECTION NAME: 9th & Mission
SCENARIO: PM Peak-Existing

INPUT DATA

Average Light Cycle Time (all directions): 62

NORTHBOUND:

Average green time -	30			Average green time -		27	
Number of exit lanes -	6			Number of exit lanes -		0	
Average vehicle speed -	25			Average vehicle speed -		20	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	132	2704	34	Volumes -	0	0	0

EASTBOUND:

Average green time -	28			Average green time -		28	
Number of exit lanes -	1			Number of exit lanes -		1	
Average vehicle speed -	25			Average vehicle speed -		25	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	0	348	0	Volumes	0	792	274

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	2870
Vehicles/Lane/Cycle -	8.5
Vehicles Delayed/ln/cy -	4.4
Departure Volume -	2978
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	169

SOUTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	35
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

EASTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	348
Vehicles/Lane/Cycle -	6.6
Vehicles Delayed/ln/cy -	3.6
Departure Volume -	382
First Vehicle Idle Time -	34
Last Vehicle Idle Time -	0
Min. stopline distance -	151

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1066
Vehicles/Lane/Cycle -	15.9
Vehicles Delayed/ln/cy -	8.7
Departure Volume -	924
First Vehicle Idle Time -	34
Last Vehicle Idle Time -	0
Min. stopline distance -	269

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 9th & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 9th - NB	840	0	0	840	IN	2870	14.3	.0	80.0
B. Mission - EB	0	0	920	840	IN	348	14.3	.0	35.0
C. Mission - WB	900	840	-20	0	IN	1066	14.3	.0	35.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	555	5.	8.	25.	9	4	2978	1.30	32.	0.
B.	0.	0.	560	5.	8.	25.	7	4	382	1.30	34.	0.
C.	0.	0.	595	5.	8.	25.	16	9	924	1.30	34.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	435	475	5.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 9th & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	163.	15.3	6.8	.5	1.0

10.5

INTERSECTION NAME: 9th Street & Mission
SCENARIO: PM Peak-Existing+Project

INPUT DATA

Average Light Cycle Time (all directions): 62

NORTHBOUND:

Average green time -	30		
Number of exit lanes -	6		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	137	2717	42

SOUTHBOUND:

Average green time -	27		
Number of exit lanes -	0		
Average vehicle speed -	20		
Traffic	Left	Thru	Right
Volumes -	0	0	0

EASTBOUND:

Average green time -	28		
Number of exit lanes -	1		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	0	355	0

WESTBOUND:

Average green time -	28		
Number of exit lanes -	1		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes	0	795	274

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	2896
Vehicles/Lane/Cycle -	8.6
Vehicles Delayed/ln/cy -	4.4
Departure Volume -	2991
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	170

SOUTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	35
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

EASTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	355
Vehicles/Lane/Cycle -	6.8
Vehicles Delayed/ln/cy -	3.7
Departure Volume -	397
First Vehicle Idle Time -	34
Last Vehicle Idle Time -	0
Min. stopline distance -	154

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	1069
Vehicles/Lane/Cycle -	16.1
Vehicles Delayed/ln/cy -	8.8
Departure Volume -	932
First Vehicle Idle Time -	34
Last Vehicle Idle Time -	0
Min. stopline distance -	270

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 9th & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 9th - NB	*	840	0	0	840	* IN	2896	14.3	.0	80.0
B. Mission - EB	*	0	0	920	840	* IN	355	14.3	.0	35.0
C. Mission - WB	*	900	840	-20	0	* IN	1069	14.3	.0	35.0

LINK	*	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	*	0.	0.	555	5.	8.	25.	9	4	2991	1.30	32.	0.
B.	*	0.	0.	560	5.	8.	25.	7	4	397	1.30	34.	0.
C.	*	0.	0.	595	5.	8.	25.	16	9	932	1.30	34.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z
1. RECPT 1	*	435	475	5.0

JOB: 9th & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	163.	15.3	6.9	.5	1.0

10.5

INTERSECTION NAME: 9th Street & Mission
SCENARIO: PM Peak-2010+State Bldg+Project

INPUT DATA

Average Light Cycle Time (all directions): 62

NORTHBOUND:				SOUTHBOUND:			
Average green time -	30			Average green time -		27	
Number of exit lanes -	6			Number of exit lanes -		0	
Average vehicle speed -	20			Average vehicle speed -		15	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	158	3157	47	Volumes -	0	0	0

EASTBOUND:				WESTBOUND:			
Average green time -	28			Average green time -		28	
Number of exit lanes -	1			Number of exit lanes -		1	
Average vehicle speed -	20			Average vehicle speed -		20	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	0	411	0	Volumes	0	923	318

OUTPUT DATA

NORTHBOUND:	
Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	3362
Vehicles/Lane/Cycle -	10.0
Vehicles Delayed/ln/cy -	5.1
Departure Volume -	3475
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	162

SOUTHBOUND:	
Deceleration -	2.8
Acceleration -	4.5
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	35
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

EASTBOUND:	
Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	411
Vehicles/Lane/Cycle -	7.9
Vehicles Delayed/ln/cy -	4.3
Departure Volume -	458
First Vehicle Idle Time -	34
Last Vehicle Idle Time -	0
Min. stopline distance -	143

WESTBOUND:	
Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	1241
Vehicles/Lane/Cycle -	18.6
Vehicles Delayed/ln/cy -	10.2
Departure Volume -	1081
First Vehicle Idle Time -	34
Last Vehicle Idle Time -	0
Min. stopline distance -	278

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 9th & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	5.2 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 9th - NB	840	0	0	840	IN	3362	6.3	.0	80.0
B. Mission - EB	0	0	920	840	IN	411	6.3	.0	35.0
C. Mission - WB	900	840	-20	0	IN	1241	6.3	.0	35.0

LINK	MIXW L (FT)	MIXW R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	555	4.	6.	20.	10	5	3475	.70	32.	0.
B.	0.	0.	560	4.	6.	20.	8	4	458	.70	34.	0.
C.	0.	0.	595	4.	6.	20.	19	10	1081	.70	34.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	435	475	5.0

JOB: 9th & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	156.	8.3	2.7	.0	.3

5.7

INTERSECTION NAME: 9th Street & Market
SCENARIO: PM Peak-2010+State Bldg

INPUT DATA

Average Light Cycle Time (all directions): 59

NORTHBOUND:

Average green time -	28		
Number of exit lanes -	4		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	128	3465	156

SOUTHBOUND:

Average green time -	27		
Number of exit lanes -	0		
Average vehicle speed -	20		
Traffic	Left	Thru	Right
Volumes -	0	0	0

EASTBOUND:

Average green time -	22		
Number of exit lanes -	2		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	0	502	0

WESTBOUND:

Average green time -	22		
Number of exit lanes -	2		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes	0	653	252

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	3749
Vehicles/Lane/Cycle -	15.2
Vehicles Delayed/In/cy -	8.0
Departure Volume -	3717
First Vehicle Idle Time -	31
Last Vehicle Idle Time -	36
Min. stopline distance -	252

SOUTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/In/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

EASTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	502
Vehicles/Lane/Cycle -	5.4
Vehicles Delayed/In/cy -	3.4
Departure Volume -	658
First Vehicle Idle Time -	37
Last Vehicle Idle Time -	0
Min. stopline distance -	148

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	905
Vehicles/Lane/Cycle -	6.4
Vehicles Delayed/In/cy -	4.0
Departure Volume -	781
First Vehicle Idle Time -	37
Last Vehicle Idle Time -	0
Min. stopline distance -	160

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 9th & Market
RUN: 2010 (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	5.2 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 9th - NB	*	840	0	0	840	* IN	3749	6.3	.0	60.0
B. Market - EB	*	0	0	920	840	* IN	502	6.3	.0	40.0
C. Market - WB	*	895	840	-25	0	* IN	905	6.3	.0	40.0

LINK	*	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	*	0.	0.	565	5.	8.	25.	15	8	3717	.70	31.	36.
B.	*	0.	0.	565	5.	8.	25.	5	3	658	.70	37.	0.
C.	*	0.	0.	585	5.	8.	25.	6	4	781	.70	37.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z
1. RECPT 1	*	420	470	5.0

JOB: 9th & Market
RUN: 2010 (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	150.	11.8	5.5	.4	.7

8.1

INTERSECTION NAME: 9th Street & Market
SCENARIO: PM Peak-2010+State Bldg+Project

INPUT DATA

Average Light Cycle Time (all directions): 59

NORTHBOUND:

Average green time -	28			Average green time -		28	
Number of exit lanes -	4			Number of exit lanes -		0	
Average vehicle speed -	25			Average vehicle speed -		15	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	129	3482	177	Volumes -	0	0	0

EASTBOUND:

Average green time -	22			Average green time -		22	
Number of exit lanes -	2			Number of exit lanes -		2	
Average vehicle speed -	25			Average vehicle speed -		25	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	0	513	0	Volumes	0	653	262

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	3788
Vehicles/Lane/Cycle -	15.3
Vehicles Delayed/ln/cy -	8.1
Departure Volume -	3744
First Vehicle Idle Time -	31
Last Vehicle Idle Time -	36
Min. stopline distance -	253

SOUTHBOUND:

Deceleration -	2.8
Acceleration -	4.5
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	31
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

EASTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	513
Vehicles/Lane/Cycle -	5.7
Vehicles Delayed/ln/cy -	3.5
Departure Volume -	690
First Vehicle Idle Time -	37
Last Vehicle Idle Time -	0
Min. stopline distance -	149

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	915
Vehicles/Lane/Cycle -	6.4
Vehicles Delayed/ln/cy -	4.0
Departure Volume -	782
First Vehicle Idle Time -	37
Last Vehicle Idle Time -	0
Min. stopline distance -	160

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 9th & Market
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	5.2 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 9th - NB	840	0	0	840	IN	3788	6.3	.0	60.0
B. Market - EB	0	0	920	840	IN	513	6.3	.0	40.0
C. Market - WB	895	840	-25	0	IN	915	6.3	.0	40.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	565	5.	8.	25.	15	8	3744	.70	31.	36.
B.	0.	0.	565	5.	8.	25.	6	4	690	.70	37.	0.
C.	0.	0.	585	5.	8.	25.	6	4	782	.70	37.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	420	470	5.0

JOB: 9th & Market
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	150.	11.8	5.5	.4	.7

B.1

INTERSECTION NAME: 6th & Mission
SCENARIO: PM Peak-Existing

INPUT DATA

Average Light Cycle Time (all directions): 62

NORTHBOUND:

Average green time -	27			Average green time -		27	
Number of exit lanes -	2			Number of exit lanes -		2	
Average vehicle speed -	20			Average vehicle speed -		20	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	53	856	102	Volumes -	0	582	109

EASTBOUND:

WESTBOUND:

Average green time -	30			Average green time -		30	
Number of exit lanes -	1			Number of exit lanes -		1	
Average vehicle speed -	20			Average vehicle speed -		20	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	0	550	190	Volumes	0	947	176

OUTPUT DATA

NORTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	1011
Vehicles/Lane/Cycle -	8.9
Vehicles Delayed/ln/cy -	5.0
Departure Volume -	1032
First Vehicle Idle Time -	35
Last Vehicle Idle Time -	0
Min. stopline distance -	159

SOUTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	691
Vehicles/Lane/Cycle -	6.6
Vehicles Delayed/ln/cy -	3.8
Departure Volume -	772
First Vehicle Idle Time -	35
Last Vehicle Idle Time -	0
Min. stopline distance -	130

EASTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	740
Vehicles/Lane/Cycle -	11.2
Vehicles Delayed/ln/cy -	5.8
Departure Volume -	652
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	177

WESTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	1123
Vehicles/Lane/Cycle -	19.1
Vehicles Delayed/ln/cy -	9.9
Departure Volume -	1109
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	270

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 6th & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 6th - NB	*	840	0	0	840	* IN	1011	14.3	.0	40.0
B. 6th - SB	*	-25	840	815	0	* IN	691	14.3	.0	40.0
C. Mission - EB	*	0	0	920	840	* IN	740	14.3	.0	35.0
D. Mission - WB	*	900	840	-20	0	* IN	1123	14.3	.0	35.0

LINK	*	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	*	0.	0.	565	4.	6.	20.	9	5	1032	1.30	35.	0.
B.	*	0.	0.	595	4.	6.	20.	7	4	772	1.30	35.	0.
C.	*	0.	0.	555	4.	6.	20.	11	6	652	1.30	32.	0.
D.	*	0.	0.	585	4.	6.	20.	19	10	1109	1.30	32.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z
1. RECPT 1	*	350	410	5.0
2. RECPT 2	*	465	510	5.0
3. RECPT 3	*	535	350	5.0
4. RECPT 4	*	420	325	5.0

JOB: 6th & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D
1. RECPT 1	65.	11.5	.5	2.2	.3	1.6
2. RECPT 2	178.	10.2	1.6	.2	.2	1.1
3. RECPT 3	294.	12.1	3.3	1.2	.3	.2
4. RECPT 4	30.	11.1	1.9	.3	.4	1.5

8/hr
7.7
6.7
8.3
7.6

INTERSECTION NAME: 6th & Mission
SCENARIO: PM Peak-Existing+Project

INPUT DATA

Average Light Cycle Time (all directions): 62

NORTHBOUND:

Average green time -	27			Average green time -		27	
Number of exit lanes -	2			Number of exit lanes -		2	
Average vehicle speed -	20			Average vehicle speed -		20	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	53	856	102	Volumes -	0	595	111

EASTBOUND:

Average green time -	30			Average green time -		30	
Number of exit lanes -	1			Number of exit lanes -		1	
Average vehicle speed -	20			Average vehicle speed -		20	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	0	557	190	Volumes	0	957	176

OUTPUT DATA

NORTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	1011
Vehicles/Lane/Cycle -	8.9
Vehicles Delayed/ln/cy -	5.0
Departure Volume -	1032
First Vehicle Idle Time -	35
Last Vehicle Idle Time -	0
Min. stopline distance -	159

SOUTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	706
Vehicles/Lane/Cycle -	6.8
Vehicles Delayed/ln/cy -	3.8
Departure Volume -	785
First Vehicle Idle Time -	35
Last Vehicle Idle Time -	0
Min. stopline distance -	131

EASTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	747
Vehicles/Lane/Cycle -	11.3
Vehicles Delayed/ln/cy -	5.9
Departure Volume -	659
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	178

WESTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	1133
Vehicles/Lane/Cycle -	19.3
Vehicles Delayed/ln/cy -	10.0
Departure Volume -	1121
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	273

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 6th & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 6th - NB	840	0	0	840	IN	1011	14.3	.0	40.0
B. 6th - SB	-25	840	815	0	IN	706	14.3	.0	40.0
C. Mission - EB	0	0	920	840	IN	747	14.3	.0	35.0
D. Mission - WB	900	840	-20	0	IN	1133	14.3	.0	35.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	565	4.	6.	20.	9	5	1032	1.30	35.	0.
B.	0.	0.	595	4.	6.	20.	7	4	785	1.30	35.	0.
C.	0.	0.	555	4.	6.	20.	11	6	659	1.30	32.	0.
D.	0.	0.	585	4.	6.	20.	19	10	1121	1.30	32.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	350	410	5.0
2. RECPT 2	465	510	5.0
3. RECPT 3	535	350	5.0
4. RECPT 4	420	325	5.0

JOB: 6th & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	
1. RECPT 1	65.	11.6	.5	2.3	.3	1.6	7.9
2. RECPT 2	178.	10.2	1.6	.2	.2	1.1	6.2
3. RECPT 3	294.	12.1	3.3	1.3	.3	.2	8.3
4. RECPT 4	30.	11.1	1.9	.3	.4	1.5	7.6

INTERSECTION NAME: 6th & Mission
SCENARIO: PM Peak-2010 + State Bldg+Project

INPUT DATA

Average Light Cycle Time (all directions): 62

NORTHBOUND:

Average green time -	27			Average green time -		27		
Number of exit lanes -	2			Number of exit lanes -		2		
Average vehicle speed -	10			Average vehicle speed -		10		
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right	
Volumes -	64	1040	124	Volumes -	0	720	134	

EASTBOUND:

Average green time -	30			Average green time -		30		
Number of exit lanes -	1			Number of exit lanes -		1		
Average vehicle speed -	10			Average vehicle speed -		10		
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right	
Volumes -	0	675	231	Volumes	0	1161	214	

OUTPUT DATA

NORTHBOUND:

Deceleration -	1.9
Acceleration -	3.0
Approach, VPH -	1228
Vehicles/Lane/Cycle -	10.8
Vehicles Delayed/ln/cy -	6.1
Departure Volume -	1254
First Vehicle Idle Time -	35
Last Vehicle Idle Time -	0
Min. stopline distance -	150

SOUTHBOUND:

Deceleration -	1.9
Acceleration -	3.0
Approach, VPH -	854
Vehicles/Lane/Cycle -	8.2
Vehicles Delayed/ln/cy -	4.6
Departure Volume -	951
First Vehicle Idle Time -	35
Last Vehicle Idle Time -	0
Min. stopline distance -	116

EASTBOUND:

Deceleration -	1.9
Acceleration -	3.0
Approach, VPH -	906
Vehicles/Lane/Cycle -	13.8
Vehicles Delayed/ln/cy -	7.1
Departure Volume -	799
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	173

WESTBOUND:

Deceleration -	1.9
Acceleration -	3.0
Approach, VPH -	1375
Vehicles/Lane/Cycle -	23.4
Vehicles Delayed/ln/cy -	12.1
Departure Volume -	1359
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	287

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 6th & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	5.2 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 6th - NB	840	0	0	840	IN	1228	6.3	.0	40.0
B. 6th - SB	-25	840	815	0	IN	854	6.3	.0	40.0
C. Mission - EB	0	0	920	840	IN	906	6.3	.0	35.0
D. Mission - WB	900	840	-20	0	IN	1375	6.3	.0	35.0

LINK	MIXW L (FT)	MIXW R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	565	2.	3.	10.	11	6	1254	.70	35.	0.
B.	0.	0.	595	2.	3.	10.	8	5	951	.70	35.	0.
C.	0.	0.	555	2.	3.	10.	14	7	799	.70	32.	0.
D.	0.	0.	585	2.	3.	10.	23	12	1359	.70	32.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	350	410	5.0
2. RECPT 2	465	510	5.0
3. RECPT 3	535	350	5.0
4. RECPT 4	420	325	5.0

JOB: 6th & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D
1. RECPT 1	63.	7.2	.3	.8	.2	.7
2. RECPT 2	173.	6.7	.6	.2	.2	.6
3. RECPT 3	298.	7.3	1.2	.6	.1	.2
4. RECPT 4	334.	7.0	.4	.7	.5	.3

8hr
4.9
4.6
5.0
4.8

INTERSECTION NAME: 7th & Mission
SCENARIO: PM Peak-2010 + State Bldg

INPUT DATA

Average Light Cycle Time (all directions): 60

NORTHBOUND:

Average green time -	29		
Number of exit lanes -	4		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	144	2330	160

SOUTHBOUND:

Average green time -	27		
Number of exit lanes -	0		
Average vehicle speed -	20		
Traffic	Left	Thru	Right
Volumes -	0	0	0

EASTBOUND:

Average green time -	31		
Number of exit lanes -	1		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	0	509	0

WESTBOUND:

Average green time -	31		
Number of exit lanes -	1		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes	0	529	193

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	2634
Vehicles/Lane/Cycle -	10.5
Vehicles Delayed/ln/cy -	5.4
Departure Volume -	2523
First Vehicle Idle Time -	31
Last Vehicle Idle Time -	0
Min. stopline distance -	193

SOUTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	33
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

EASTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	509
Vehicles/Lane/Cycle -	11.2
Vehicles Delayed/ln/cy -	5.4
Departure Volume -	669
First Vehicle Idle Time -	29
Last Vehicle Idle Time -	0
Min. stopline distance -	192

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	722
Vehicles/Lane/Cycle -	11.2
Vehicles Delayed/ln/cy -	5.4
Departure Volume -	673
First Vehicle Idle Time -	29
Last Vehicle Idle Time -	0
Min. stopline distance -	193

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 7th & Mission
RUN: 2010 (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	5.2 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 7th - NB	840	0	0	840	IN	2634	6.3	.0	60.0
B. Mission - EB	0	0	920	840	IN	509	6.3	.0	35.0
C. Mission - WB	900	840	-20	0	IN	722	6.3	.0	35.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	555	5.	8.	25.	11	5	2523	.70	31.	0.
B.	0.	0.	570	5.	8.	25.	11	5	669	.70	29.	0.
C.	0.	0.	585	5.	8.	25.	11	5	673	.70	29.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	420	350	5.0
2. RECPT 2	480	410	5.0

JOB: 7th & Mission
RUN: 2010 (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	36.	9.0	2.4	.6	.8
2. RECPT 2	235.	9.9	3.4	1.1	.2

8hr
6.2
6.8

INTERSECTION NAME: 7th & Mission
SCENARIO: PM Peak-2010 + State Bldg+Project

INPUT DATA

Average Light Cycle Time (all directions): 60

NORTHBOUND:

Average green time -	29			Average green time -	29		
Number of exit lanes -	4			Number of exit lanes -	0		
Average vehicle speed -	25			Average vehicle speed -	10		
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	144	2333	160	Volumes -	0	0	0

EASTBOUND:

Average green time -	31			Average green time -	31		
Number of exit lanes -	1			Number of exit lanes -	1		
Average vehicle speed -	25			Average vehicle speed -	25		
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	0	516	0	Volumes	0	530	203

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	2637
Vehicles/Lane/Cycle -	10.6
Vehicles Delayed/ln/cy -	5.5
Departure Volume -	2536
First Vehicle Idle Time -	31
Last Vehicle Idle Time -	0
Min. stopline distance -	194

SOUTHBOUND:

Deceleration -	1.9
Acceleration -	3.0
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	31
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

EASTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	516
Vehicles/Lane/Cycle -	11.3
Vehicles Delayed/ln/cy -	5.4
Departure Volume -	676
First Vehicle Idle Time -	29
Last Vehicle Idle Time -	0
Min. stopline distance -	193

WESTBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	733
Vehicles/Lane/Cycle -	11.2
Vehicles Delayed/ln/cy -	5.4
Departure Volume -	674
First Vehicle Idle Time -	29
Last Vehicle Idle Time -	0
Min. stopline distance -	193

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 7th & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	5.2 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 7th - NB	*	840	0	0	840	* IN	2637	6.3	.0	60.0
B. Mission - EB	*	0	0	920	840	* IN	516	6.3	.0	35.0
C. Mission - WB	*	900	840	-20	0	* IN	733	6.3	.0	35.0

LINK	*	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	*	0.	0.	555	5.	8.	25.	11	6	2536	.70	31.	0.
B.	*	0.	0.	570	5.	8.	25.	11	5	676	.70	29.	0.
C.	*	0.	0.	585	5.	8.	25.	11	5	674	.70	29.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z
1. RECPT 1	*	420	350	5.0
2. RECPT 2	*	480	410	5.0

JOB: 7th & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	37.	9.3	2.7	.6	.8
2. RECPT 2	234.	10.2	3.8	1.0	.2

8hr.
6.4
7.0

INTERSECTION NAME: 8th & Mission
SCENARIO: PM Peak-Existing

INPUT DATA

Average Light Cycle Time (all directions): 60

NORTHBOUND:

Average green time -	27		
Number of exit lanes -	0		
Average vehicle speed -	25		
Traffic	Left	Thru	Right
Volumes -	0	0	0

SOUTHBOUND:

Average green time -	28		
Number of exit lanes -	4		
Average vehicle speed -	20		
Traffic	Left	Thru	Right
Volumes -	116	1596	232

EASTBOUND:

Average green time -	31		
Number of exit lanes -	1		
Average vehicle speed -	20		
Traffic	Left	Thru	Right
Volumes -	0	390	210

WESTBOUND:

Average green time -	31		
Number of exit lanes -	2		
Average vehicle speed -	20		
Traffic	Left	Thru	Right
Volumes	12	936	0

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	33
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

SOUTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	1944
Vehicles/Lane/Cycle -	7.6
Vehicles Delayed/ln/cy -	4.0
Departure Volume -	1818
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	136

EASTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	600
Vehicles/Lane/Cycle -	8.4
Vehicles Delayed/ln/cy -	4.1
Departure Volume -	506
First Vehicle Idle Time -	29
Last Vehicle Idle Time -	0
Min. stopline distance -	137

WESTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	948
Vehicles/Lane/Cycle -	9.7
Vehicles Delayed/ln/cy -	4.7
Departure Volume -	1168
First Vehicle Idle Time -	29
Last Vehicle Idle Time -	0
Min. stopline distance -	152

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 8th & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 8th - SB	0	840	840	0	IN	1944	14.3	.0	60.0
B. Mission - EB	0	0	920	840	IN	600	14.3	.0	35.0
C. Mission - WB	900	840	-20	0	IN	948	14.3	.0	40.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	565	4.	6.	20.	8	4	1818	1.30	32.	0.
B.	0.	0.	565	4.	6.	20.	8	4	506	1.30	29.	0.
C.	0.	0.	595	4.	6.	20.	10	5	1168	1.30	29.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	380	500	5.0

JOB: 8th & Mission
RUN: Existing (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	182.	14.5	6.5	.7	.3

8hr

INTERSECTION NAME: 8th & Mission
SCENARIO: PM Peak-Existing+Project

INPUT DATA

Average Light Cycle Time (all directions): 60

NORTHBOUND:

Average green time -	30			Average green time -		28	
Number of exit lanes -	0			Number of exit lanes -		4	
Average vehicle speed -	20			Average vehicle speed -		20	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	0	0	0	Volumes -	116	1608	235

EASTBOUND:

Average green time -	31			Average green time -		31	
Number of exit lanes -	1			Number of exit lanes -		2	
Average vehicle speed -	20			Average vehicle speed -		20	
Traffic	Left	Thru	Right	Traffic	Left	Thru	Right
Volumes -	0	397	218	Volumes	12	938	0

OUTPUT DATA

NORTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/ln/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

SOUTHBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	1959
Vehicles/Lane/Cycle -	7.7
Vehicles Delayed/ln/cy -	4.1
Departure Volume -	1838
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	137

EASTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	615
Vehicles/Lane/Cycle -	8.6
Vehicles Delayed/ln/cy -	4.1
Departure Volume -	513
First Vehicle Idle Time -	29
Last Vehicle Idle Time -	0
Min. stopline distance -	139

WESTBOUND:

Deceleration -	4.3
Acceleration -	6.1
Approach, VPH -	950
Vehicles/Lane/Cycle -	9.8
Vehicles Delayed/ln/cy -	4.7
Departure Volume -	1173
First Vehicle Idle Time -	29
Last Vehicle Idle Time -	0
Min. stopline distance -	152

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 8th & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	7.0 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 8th - SB	0	840	840	0	IN	1959	14.3	.0	60.0
B. Mission - EB	0	0	920	840	IN	615	14.3	.0	35.0
C. Mission - WB	900	840	-20	0	IN	950	14.3	.0	40.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	565	4.	6.	20.	8	4	1838	1.30	32.	0.
B.	0.	0.	565	4.	6.	20.	9	4	513	1.30	29.	0.
C.	0.	0.	595	4.	6.	20.	10	5	1173	1.30	29.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	380	500	5.0

JOB: 8th & Mission
RUN: Existing+Pro (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	183.	14.5	6.6	.7	.3

8hr
10.0

INTERSECTION NAME: 8th & Mission
SCENARIO: PM Peak-2010 + State Bldg+Project

INPUT DATA

Average Light Cycle Time (all directions): 60

NORTHBOUND:

Average green time -	30			
Number of exit lanes -	0			
Average vehicle speed -	25			
Traffic	Left	Thru	Right	
Volumes -	0	0	0	

SOUTHBOUND:

Average green time -	28		
Number of exit lanes -	4		
Average vehicle speed -	10		
Traffic	Left	Thru	Right
Volumes -	135	1944	272

EASTBOUND:

Average green time -	31		
Number of exit lanes -	1		
Average vehicle speed -	10		
Traffic	Left	Thru	Right
Volumes -	0	460	252

WESTBOUND:

Average green time -	31		
Number of exit lanes -	2		
Average vehicle speed -	10		
Traffic	Left	Thru	Right
Volumes	14	1089	0

OUTPUT DATA

NORTHBOUND:

Deceleration -	5.4
Acceleration -	7.6
Approach, VPH -	0
Vehicles/Lane/Cycle -	#DIV/0!
Vehicles Delayed/In/cy -	#DIV/0!
Departure Volume -	0
First Vehicle Idle Time -	30
Last Vehicle Idle Time -	#DIV/0!
Min. stopline distance -	#DIV/0!

SOUTHBOUND:

Deceleration -	1.9
Acceleration -	3.0
Approach, VPH -	2351
Vehicles/Lane/Cycle -	9.2
Vehicles Delayed/In/cy -	4.9
Departure Volume -	2210
First Vehicle Idle Time -	32
Last Vehicle Idle Time -	0
Min. stopline distance -	122

EASTBOUND:

Deceleration -	1.9
Acceleration -	3.0
Approach, VPH -	712
Vehicles/Lane/Cycle -	9.9
Vehicles Delayed/In/cy -	4.8
Departure Volume -	595
First Vehicle Idle Time -	29
Last Vehicle Idle Time -	0
Min. stopline distance -	120

WESTBOUND:

Deceleration -	1.9
Acceleration -	3.0
Approach, VPH -	1103
Vehicles/Lane/Cycle -	11.3
Vehicles Delayed/In/cy -	5.5
Departure Volume -	1361
First Vehicle Idle Time -	29
Last Vehicle Idle Time -	0
Min. stopline distance -	136

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: 8th & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	.5 M/S	Z0=	200. CM	ALT=	30. (FT)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	5.2 PPM		
SIGTH=	10. DEGREES	TEMP=	8.1 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. 8th - SB	0	840	840	0	IN	2351	6.3	.0	60.0
B. Mission - EB	0	0	920	840	IN	712	6.3	.0	35.0
C. Mission - WB	900	840	-20	0	IN	1103	6.3	.0	40.0

LINK	MIXW L (FT)	R (FT)	STPL (FT)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0.	0.	565	2.	3.	10.	9	5	2210	.70	32.	0.
B.	0.	0.	565	2.	3.	10.	10	5	595	.70	29.	0.
C.	0.	0.	595	2.	3.	10.	11	6	1361	.70	29.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECPT 1	380	500	5.0

JOB: 8th & Mission
RUN: 2010+Project (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C
1. RECPT 1	144.	8.1	2.6	.0	.2

Blvr
5.5

APPENDIX C

PHASE I, 7TH & MISSION

BASELINE

PHASE I SITE ASSESSMENT

MAY 1995

SEVENTH STREET/MISSION STREET
PARCELS
San Francisco, California

For:

San Francisco Redevelopment Agency
San Francisco, California

91315-L0

5900 Hollis Street, Suite D • Emeryville, CA 94608 • (510) 420-8686

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BASELINE

ENVIRONMENTAL CONSULTING

1 May 1995
91315-L0

Mr. Bill Nakamura
San Francisco Redevelopment Agency
770 Golden Gate Avenue
San Francisco, CA 94102-3120

Subject: Phase I Site Assessment, Seventh Street/Mission Street Parcels, San Francisco, California

Dear Mr. Nakamura:

Please find enclosed our report documenting activities and findings of the Phase I Environmental Site Assessment for the Seventh Street/Mission Street Parcels in San Francisco, California. If you have any questions or comments, please contact us at your convenience.

Sincerely,

Yane Nordhav
Principal
Reg. Environmental Assessor No. 722

Todd Taylor
Environmental Historian

5900 Hollis Street, Suite D • Emeryville, CA 94608
TEL: (510) 420-8686 • FAX: (510) 420-1707 • INTERNET:baseline@crl.com
Emeryville • Petaluma • San Francisco

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PHASE I SITE ASSESSMENT

MAY 1995

SEVENTH STREET/MISSION STREET PARCELS
San Francisco, California

For:

San Francisco Redevelopment Agency
San Francisco, California

91315-L0

BASELINE Environmental Consulting
5900 Hollis Street, Suite D • Emeryville, California 94608
(510) 420-8686

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PHASE I SITE ASSESSMENT REPORT

Seventh Street/Mission Street Parcels
San Francisco, California

INTRODUCTION

This report presents the findings and conclusions of a Phase I site assessment conducted by BASELINE for the Seventh Street/Mission Street Parcels in San Francisco, California (Site) for the San Francisco Redevelopment Agency (SFRA). The purpose of the site assessment was to determine whether past or present land uses on-site, or adjacent to the Site, have or could potentially have affected the soil or groundwater quality at the Site. The scope of work included a review of available information from local, state, and federal agency files, maps, historical aerial photographs, and a site reconnaissance. The site reconnaissance was conducted to identify visible evidence of past and current use, storage, disposal, or spillage of hazardous materials on the Site or adjacent to the site. All work was performed in accordance with the "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," established by the American Society for Testing and Materials (ASTM) in Method E1527-94.

SITE LOCATION

The Site consists of portions of two Parcels in Assessor's Block 3702 in San Francisco, California (Figures 1 and 2). The Site consists of Lot numbers 5, 15, and 16 in Parcel 1, and Lot numbers 29 and 31-38 in Parcel 2. The Site is bounded by Stevenson Street to the north, Seventh Street to the east, and Mission Street to the south. Jesse Street, a two-lane City roadway, bisects the Site and serves as the boundary between Parcels 1 and 2. The site measures 350 feet by 499 feet, and is approximately 4 acres in area.

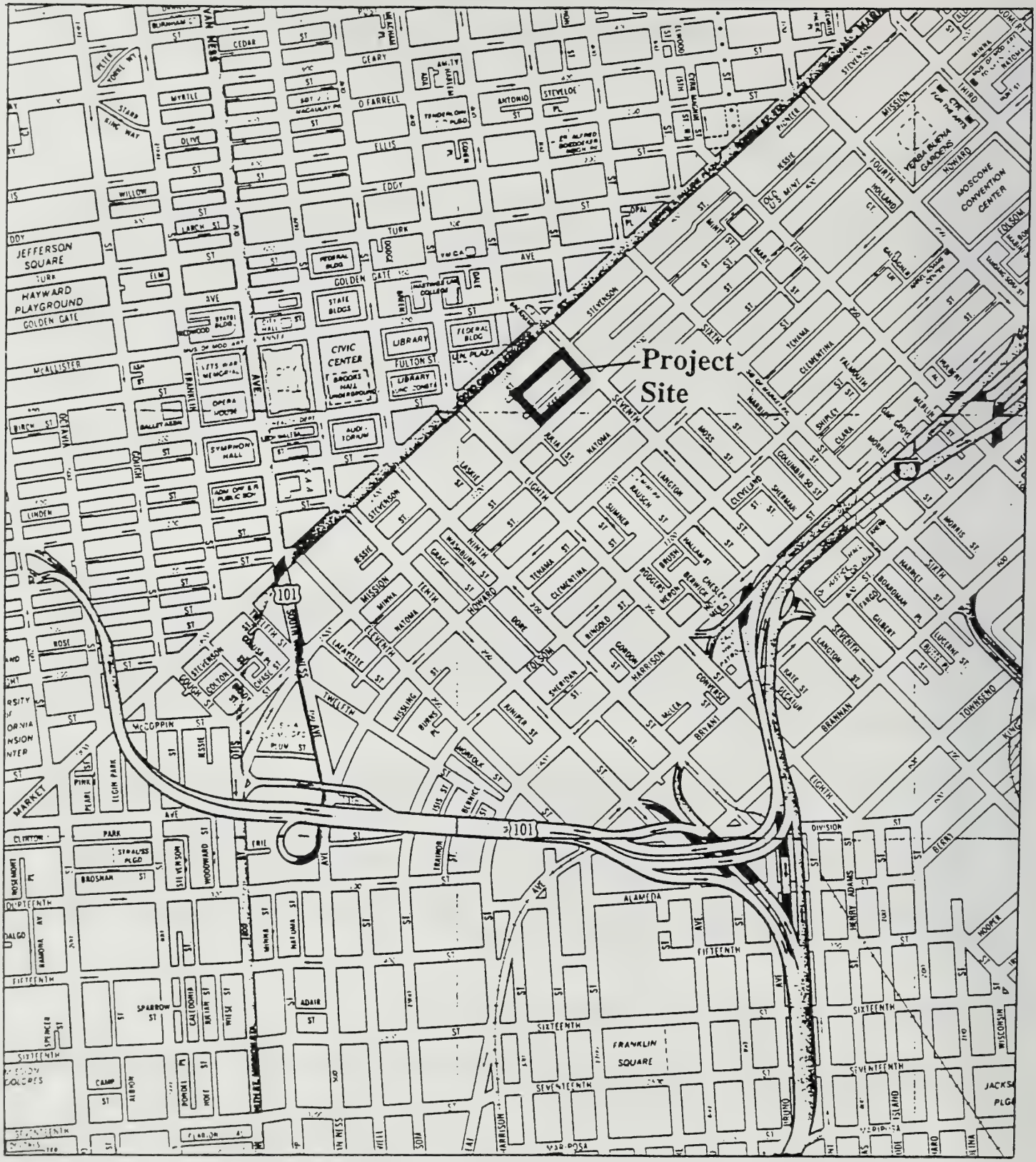
The topography of the Site is level, with an elevation of approximately 35 feet above mean sea level (USGS, 1973). A geotechnical investigation conducted 400 feet north of the Site indicated that soils near the Site consisted of ten to twelve feet of fill materials (an eight- to ten-foot layer of yellowish-brown sand overlying an two- to four-foot layer of brick and rubble) overlying approximately fifteen feet of dark olive brown sand (Geomatrix, 1992). Site subsurface conditions may be similar. Depth to groundwater in the site vicinity is approximately 21 feet below ground surface (Geomatrix, 1992); groundwater flows south-southeast toward China Basin.

SITE RECONNAISSANCE/CURRENT LAND USE

A reconnaissance of the Site was conducted by BASELINE on 27 April 1995. Observations made during the Site reconnaissance are detailed below.

REGIONAL LOCATION

Figure 1

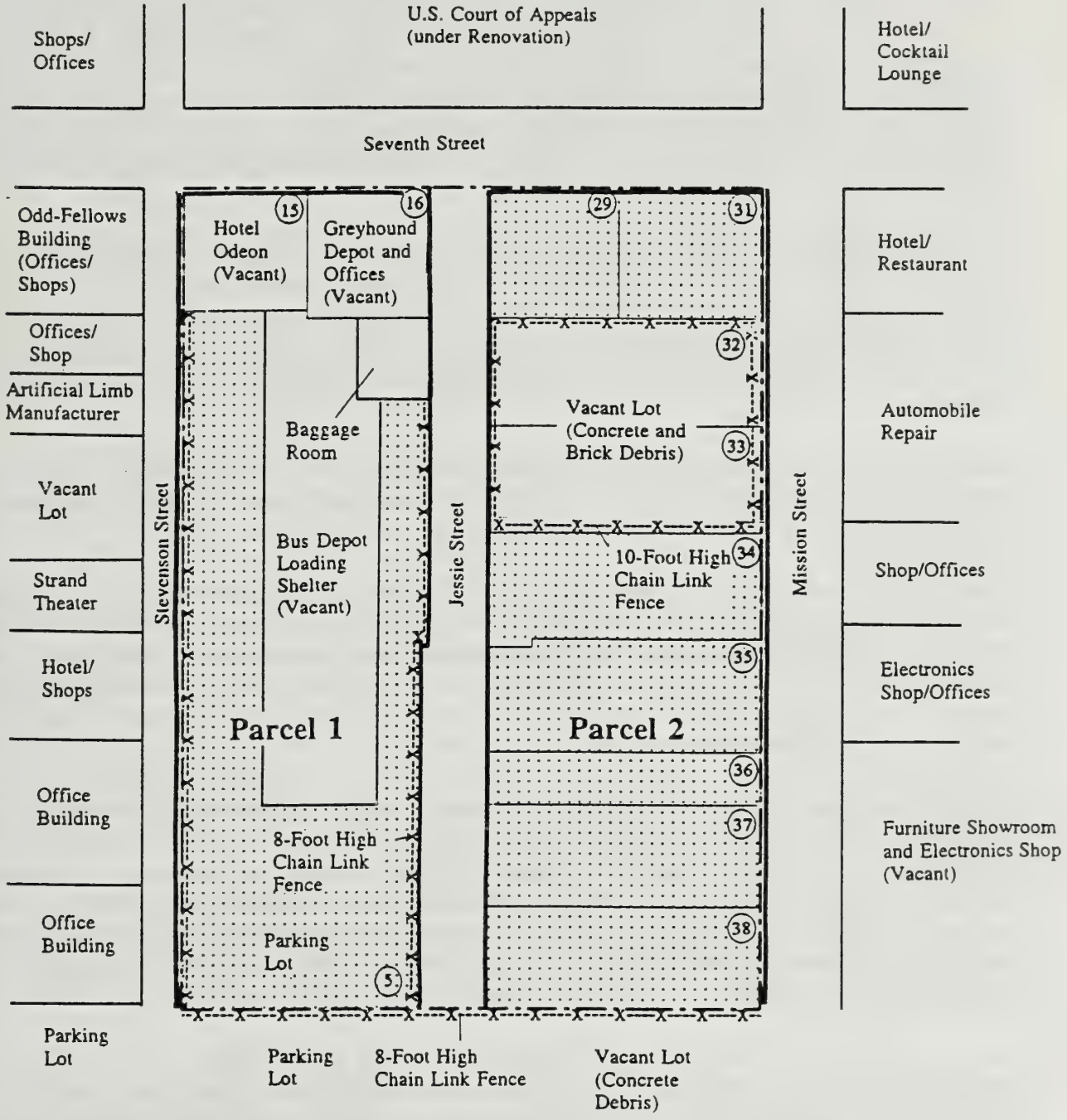


Seventh Street/Mission Street Parcels
San Francisco, California

BASELINE

SITE PLAN

Figure 2



Legend

(5) Lot Numbers

Parcel Boundary

Parking Lots

Lot Boundary

Project Site Boundary

Seventh Street/Mission Street Parcels
San Francisco, California

0 100 Feet

BASELINE

Site

The Site was relatively level, with a very slight slope toward the southeast. The western part of the Site (Parcel 1) is dominated by three vacant buildings. At the corner of Seventh and Stevenson streets was a vacant five-story concrete building, the former Hotel Odeon (Figure 2). The windows and entrances to this building were boarded up. Adjacent to the vacant hotel was a vacant four-story brick building, the former site of the Greyhound bus depot and offices. Behind the depot was a long one-story concrete and steel bus loading shelter (Figure 2). Entrances and windows at both the bus depot building and loading shelter were boarded up.

The area around the bus loading shelter is used as a parking lot. This area is secured with an 8-foot high chain link fence, with a gate on Stevenson Street near the southwestern corner of the Site to allow vehicle access. The surface of this parking lot is concrete and in good condition, with a few cracks. Numerous oil and grease stains were present on the surface of the concrete surface. No vent or fill pipes or other evidence of underground storage tanks was found in this portion of the Site, suggesting that Greyhound buses were fueled and serviced at a different location.

Jessie Street, a 30-foot wide asphalt City roadway, is the boundary between Parcels 1 and 2. The street was in poor condition, with numerous large cracks and potholes. Oil, grease, and paint stains were visible on the asphalt surface.

The eastern portion of the Site (Parcel 2) consists of two parking lots and one vacant lot (Figure 2). A small parking lot, measuring approximately 165 by 80 feet, was located at the corner of Seventh and Mission Streets. The surface of the parking lot was asphalt and concrete. The parking surface was in poor condition, with numerous cracks and potholes. Oil and grease stains were visible on the concrete and asphalt surfaces. Drainage at this lot was poor; several large puddles of standing water from a recent rain were visible.

A vacant lot, measuring approximately 130 by 165 feet, was located south of the small parking lot (Figure 2). The lot was secured with a 10-foot chain link fence. The lot was covered with tall grasses and weeds. Visible exposed soil appeared light brown and sandy, similar to the surface soils described in a geotechnical report conducted near the Site (Geomatrix, 1992). Large pieces of concrete and brick debris were visible on the vacant lot, presumably from a former building on the lot. Assorted paper and plastic litter and aluminum cans were visible in the portion of the lot adjacent to Mission Street.

South of the vacant lot was a second parking lot, measuring approximately 285 by 165 feet, with vehicle access from Mission Street. The surface of the lot was asphalt, and in poor condition, with numerous cracks and potholes. Oil and grease stains were visible on the asphalt surface. Drainage at this lot was poor; several large puddles of standing water from a recent rain were visible.

Adjacent Areas

North of the Site, across Seventh Street, is the U.S. Court of Appeals building. The building is closed for renovation. Scaffolding was present in front of the building along Seventh Street and construction work was underway at the rear of the building. West of the site, along Market Street, were several

commercial properties, including the Odd-Fellows Building (consisting of offices and shops), the former site of an artificial limb manufacturer (vacant), a vacant lot (formerly the Embassy Theatre), a movie theatre, a hotel, and two office buildings (Figure 2).

Immediately south of the Site, adjacent to Parcel 1, was a parking lot for the Trinity Plaza Apartments, located at Eighth and Market streets. The parking lot had an asphalt surface, and was in good condition. The Trinity Plaza Apartments buildings are a complex of concrete and steel buildings, ranging from four to seven stories in height, that house apartments and restaurants. A vacant lot, measuring approximately 165 by 60 feet, was present immediately south of Parcel 2 (Figure 2). The lot was secured with an 8-foot high chain link fence. Concrete debris and plastic and paper litter were visible on the lot, which was covered with weeds and tall grasses.

East of the Site, across Market Street, were several commercial buildings, including a hotel and restaurant, offices, an automobile repair shop, a vacant furniture warehouse and showroom, an electronics shop, an art gallery, and a photography shop.

HISTORICAL LAND USES

Historical uses of the Site and surrounding properties were determined by review of Sanborn Fire Insurance maps and historical aerial photographs. Sanborn maps for the years 1886, 1899, 1913, 1949, 1950, 1974, 1990, and 1994 were reviewed (Sanborn Fire Insurance Company, 1995). Historical aerial photographs for the years 1938, 1948, 1958, 1969, 1979, 1986, and 1993 were reviewed to confirm Sanborn map information and to provide land use information for periods when Sanborn maps were not available. A summary of historical land uses is provided in Table 1; details are provided below.

In the 1886 Sanborn Map (Figure 3), the Site was largely residential, with shops and saloons along Seventh Street and Mission Street. Areas of potential concern included two tin shops on Seventh Street and two blacksmith shops on Mission Street. Adjacent land uses included residences, offices, a banquet hall, blacksmith, mason, and upholstery shops, liveries, and house movers.

The 1899 Sanborn Map (Figure 4), showed that the blacksmith shops on Mission Street had been removed and replaced by building materials storage. Two laundries, two restaurants, and a plumbers shop were present on the Site. A furniture shop and paint shop were added to the adjacent area, and the U.S. Court of Appeals/Post Office building (Figure 2) was under construction, immediately north of the project site.

In the 1913 Sanborn Map (Figure 5), land use on the Site and vicinity changed from predominantly residential to predominantly commercial/industrial. Three hotels, two printing shops, a tent and awning factory, an artificial limb factory, a glass factory and automobile storage were present on the Site. In the Site vicinity, construction of the Court of Appeals/Post Office building was completed north of the Site, and a theatre had been constructed west of the Site. The 1938 aerial photograph showed that land uses on the Site vicinity remained commercial/industrial. A service station had been built at the corner of Eighth and Mission streets, just southwest of the Site.

TABLE 1

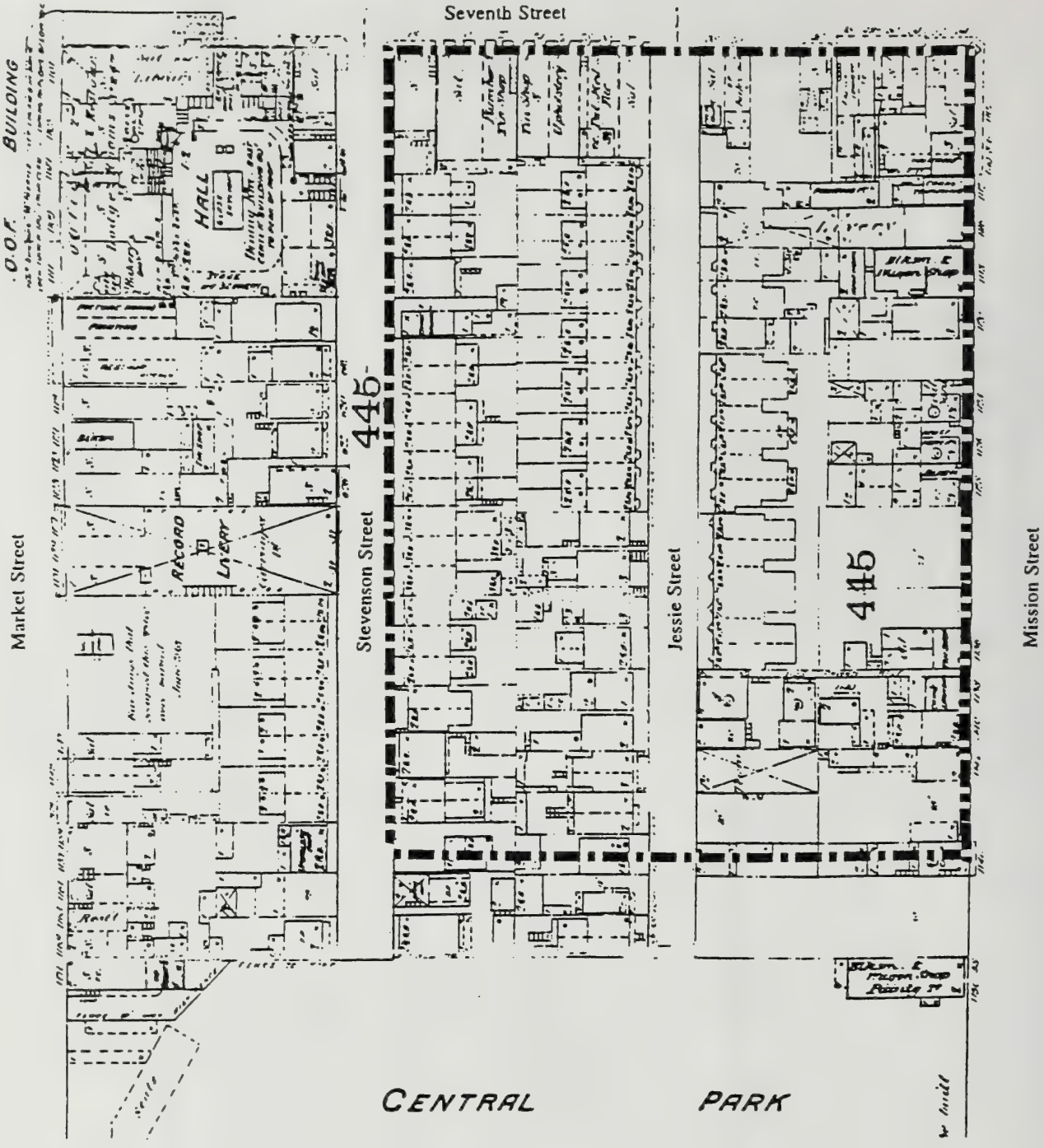
HISTORICAL LAND USES AT AND ADJACENT TO THE SITE
Seventh Street/Mission Street Parcels, San Francisco, California

Source	Project Site Land Uses	Potential Contaminants	Adjacent Uses	Potential Contaminants
1886 Sanborn Map	Plumber, tin shop, upholstery shop, patent medicine shop, carpenter shop, livery, wagon shop, blacksmith, house mover, saloons, residences	Metals	Offices, livery, tin shop, blacksmith, mason shop, upholstery shop, banquet hall, house mover, residences.	Metals
1899 Sanborn Map	Building material storage, restaurants, plumber, laundries, liquor shop, saloons, residences	Metals	Banquet hall, lodge building, offices, furniture shop, printing shop, paint shop, blacksmith, wagon shop, residences, post office/courthouse (under construction)	Metals, volatile organics, semi-volatile organics
1913 Sanborn Map	Moving picture company, restaurants, shops, saloons, automobile storage, print shops, hotels, tent and awning factory, artificial limb factory, glass works	Metals	Shops, offices, lodge halls, theatre, post office/courthouse (under construction)	None
1938 Aerial Photograph	No visible changes on the Site	Metals	Shops, offices, theatres, residences, manufacturing facilities, gasoline station, post office/courthouse	Metals, petroleum hydrocarbons
1949, 1950 Sanborn Maps, 1948, 1958 Aerial Photographs	Bus depot, parking, restaurant, offices, hotels, glass works, plumbers, lamp factory, tent and awning factory, shops	Metals, volatile organics, petroleum hydrocarbons	Cabinet shop, warehouse, shops, movie theatre, theatre, artificial limb manufacturing, electrical works, lodge hall, restaurants, post office, public market, gas and oils (Eighth & Mission-SW corner)	Metals, volatile organics, petroleum hydrocarbons
1974 Sanborn Map, 1969, 1979 Aerial Photographs	Bus depot, restaurants, hotels, shops, offices, parking lots, package depot	Metals, petroleum hydrocarbons	Electrical manufacturing, motel, movie theatre, theatre, hotel, offices, restaurants, radio broadcast studio, artificial limb manufacturing, electrical manufacturing, post office, parking lots (gas station removed)	Metals, petroleum hydrocarbons

Source	Project Site Land Uses	Potential Contaminants	Adjacent Uses	Potential Contaminants
1990 Sanborn Map, 1986 Aerial Photograph	Bus depot, restaurant, hotel, parking lots	Metals, petroleum hydrocarbons	Shops, lodge hall, restaurants, radio/television broadcast studio, offices, artificial limb manufacturing, theatre (vacant), movie theatre, hotel, parking lot, post office, Trinity Plaza	Metals, petroleum hydrocarbons
1994 Sanborn Map, 1993 Aerial Photograph	Bus depot (vacant), restaurant, hotel, parking lots	Metals, petroleum hydrocarbons	Shops, lodge hall, restaurants, radio/television broadcast studio, offices, artificial limb manufacturing, theatre (vacant), movie theatre, hotel, parking lot, post office, Trinity Plaza	Metals, petroleum hydrocarbons

SANBORN MAP - 1886

Figure 3



Legend

Approximate Project Site Boundary

Approximate

0 100 Feet

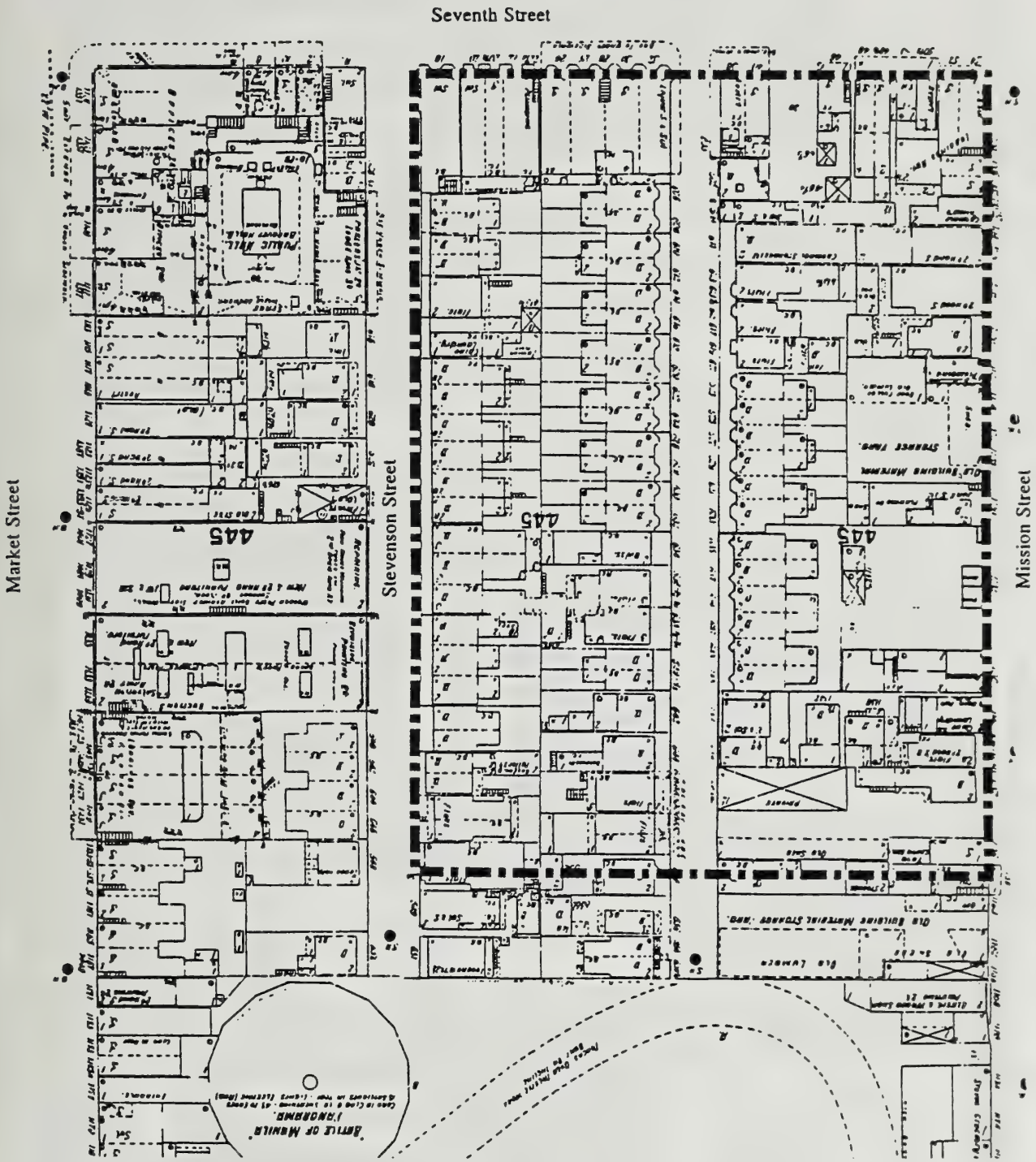
Seventh Street/Mission Street Parcels
San Francisco, California

BASELINE

91315-LO 4/18/95

SANBORN MAP - 1899

Figure 4



Legend

Approximate Project Site Boundary

Approximate

0 100 Feet

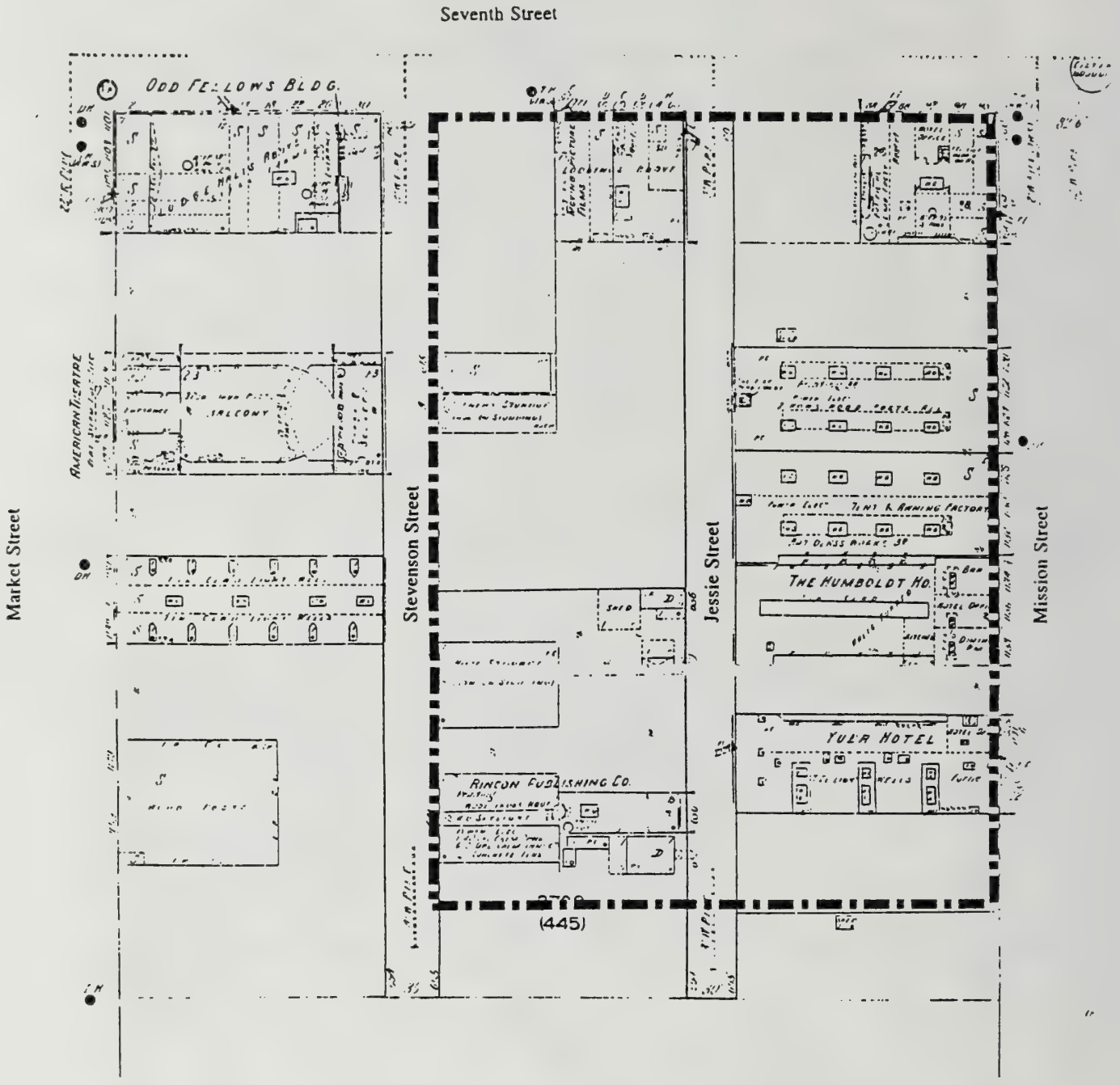
Seventh Street/Mission Street Parcels
San Francisco, California

BASELINE

91315-LO 4/18/95

SANBORN MAP - 1913

Figure 5



Legend

Approximate Project Site Boundary

Approximate

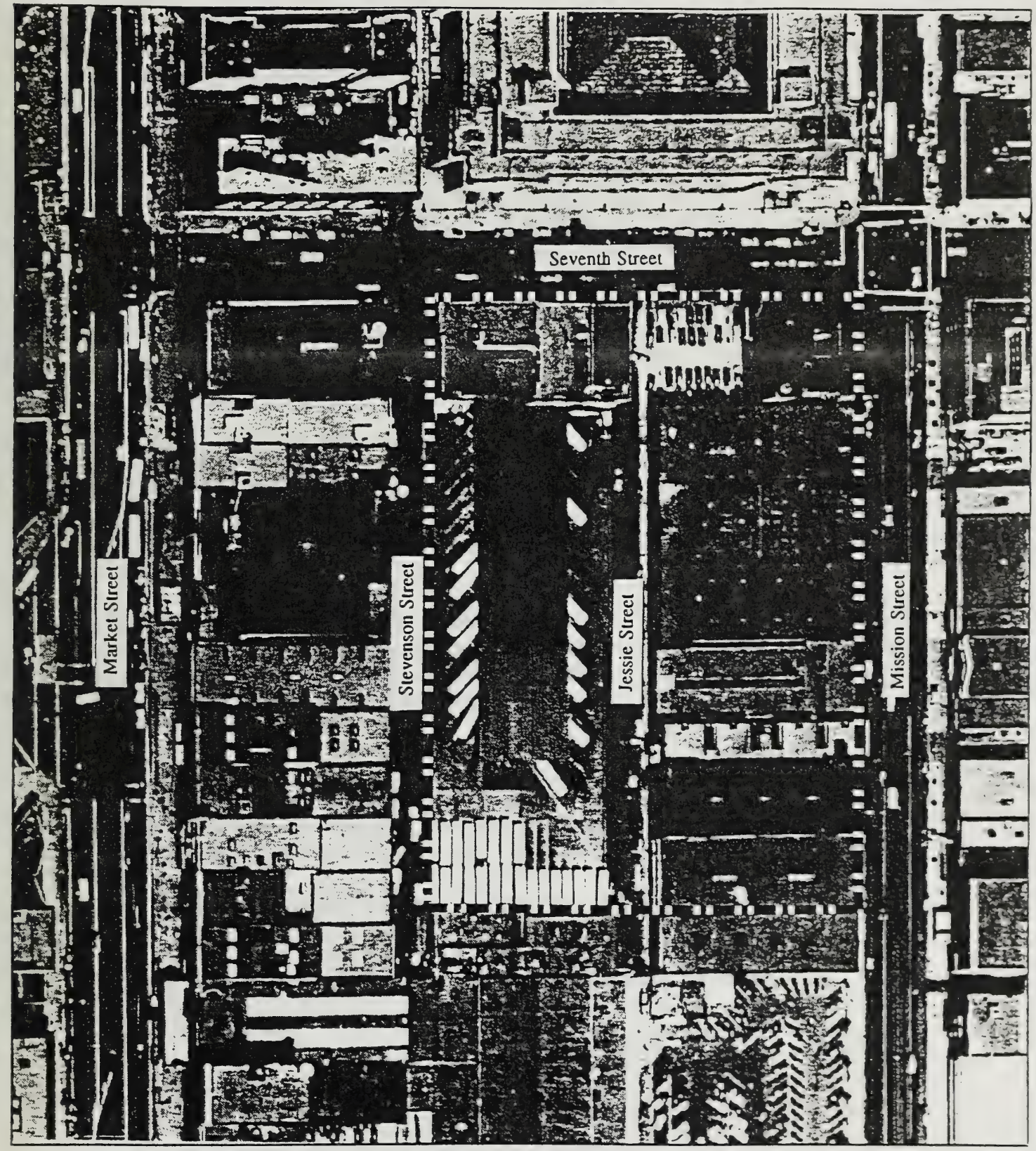
0 100 Feet

Seventh Street/Mission Street Parcels
San Francisco, California

BASELINE

AERIAL PHOTO - 1948

Figure 6



Legend

Approximate Project Site Boundary

Seventh Street/Mission Street Parcels
San Francisco, California

0 115 Feet

BASELINE

91315-LO 4/28/95

The 1948 aerial photograph (Figure 6) shows the Greyhound bus depot had been constructed on the Site at Seventh and Stevenson streets. The area south of the depot was in use for bus parking. A parking lot was visible at Seventh and Jessie streets. South of the Site, public market buildings and parking lots had been constructed. No other changes were visible in the Site vicinity. The 1949 Sanborn Map (Figure 7) and 1959 aerial photograph showed no further changes in the Site or vicinity.

The 1969 aerial photograph and 1974 Sanborn Map (Figure 8) showed that five buildings in the southwest corner of the Site had been removed and replaced by parking lots. The remaining two buildings on Mission Street were a Greyhound package depot and a hotel. South of the Site, the public market buildings had been removed and a motel and parking lot built. Several shops along Market street, near the southwest corner of the Site, had been replaced by a parking lot. The 1986 aerial photograph showed that the hotel at the corner of Seventh and Mission streets had been removed and replaced with a parking lot. No other changes were noted in the Site vicinity during these years.

The 1990 Sanborn Map (Figure 9) showed that the Greyhound package depot on Mission Street had been removed and that a baggage room had been built adjacent to the bus depot. Two office buildings had been built on Market Street near the southwest corner of the Site. The motel south of the Site had been converted into an apartment building. An electrical equipment manufacturing plant, located south of the Site on Mission Street, had been removed. No other changes were noted in the Site vicinity.

The 1993 aerial photograph (Figure 10) and 1994 Sanborn Map (Figure 11) showed the Site in its present configuration. The Greyhound bus depot was no longer in use. The Embassy Theatre, west of the Site, was vacant. Scaffolding, indicating renovation work, was visible at the Court of Appeals building north of the Site. No other changes in land use were apparent at the Site or vicinity.

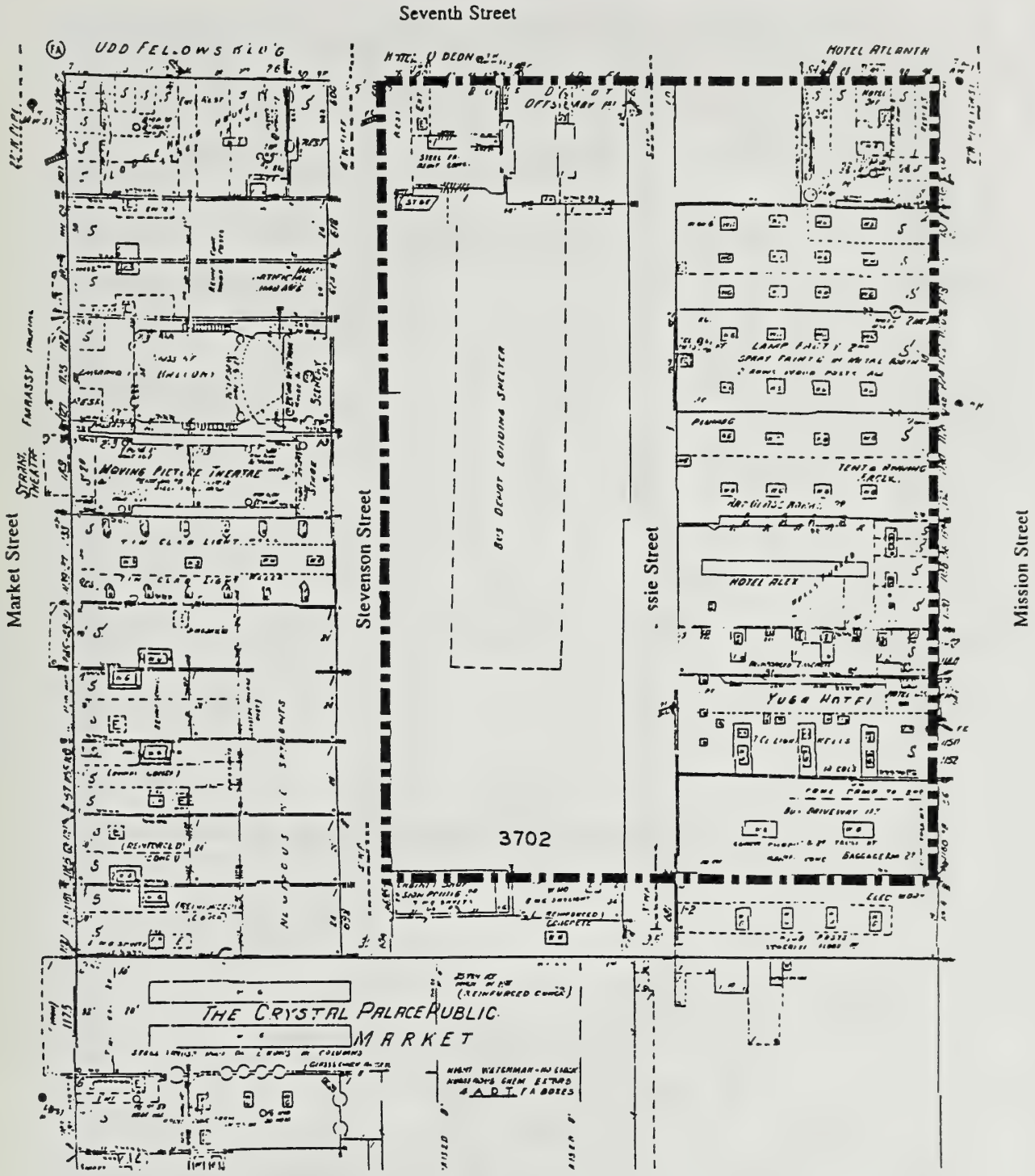
REGULATORY AGENCY RECORD REVIEW

An environmental database search for the Site vicinity was conducted on 11 April 1995 by Vista Environmental Information. The regulatory agency lists and databases searched included:

- U.S. Environmental Protection Agency (EPA) National Priorities List (NPL)
- U.S. EPA Comprehensive, Environmental, Compensation and Liability Information (CERCLIS) database
- U.S. EPA Resource Conservation and Recovery Information System (RCRIS) database
- U.S. EPA Resources Conservation and Recovery Act (RCRA) Corrective Action Sites List
- U.S. EPA Toxic Release Inventory (TRIS) List
- U.S. EPA RCRA Large Generators Facilities Database
- California EPA Cal-Sites List
- California Leaking Underground Storage Tank (LUST) Incident Reports
- California Solid Waste Information System (SWIS) Database
- California Department of Health Services Deed Restriction Properties Report List
- San Francisco Bay Regional Water Quality Control Board (RWQCB) North Bay Toxics List

SANBORN MAP - 1949

Figure 7



Legend

Approximate Project Site Boundary

Approximate

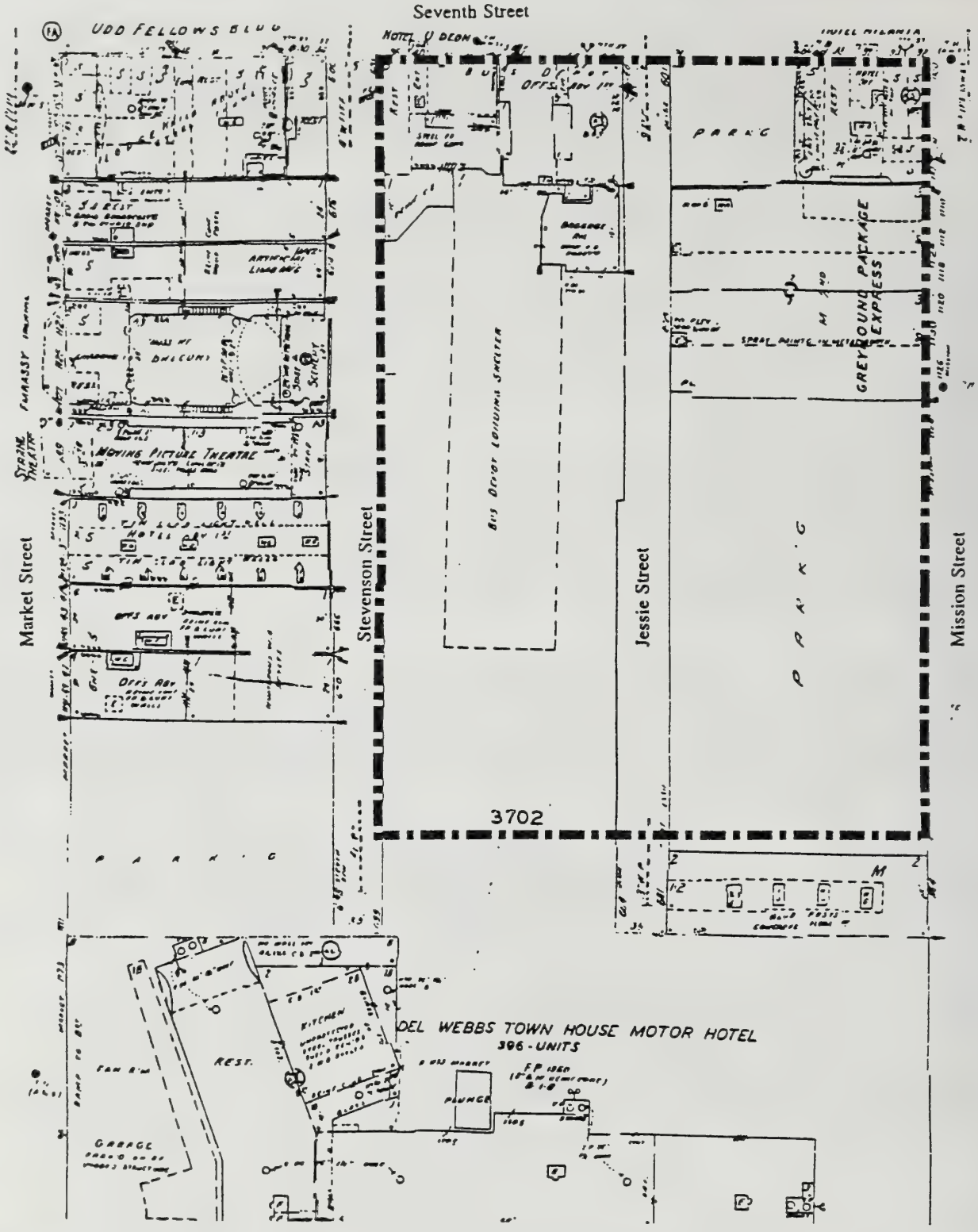
0 100 Feet

Seventh Street/Mission Street Parcels
San Francisco, California

BASELINE

SANBORN MAP - 1974

Figure 8



Legend

Approximate Project Site Boundary

Approximate

0 100 Feet

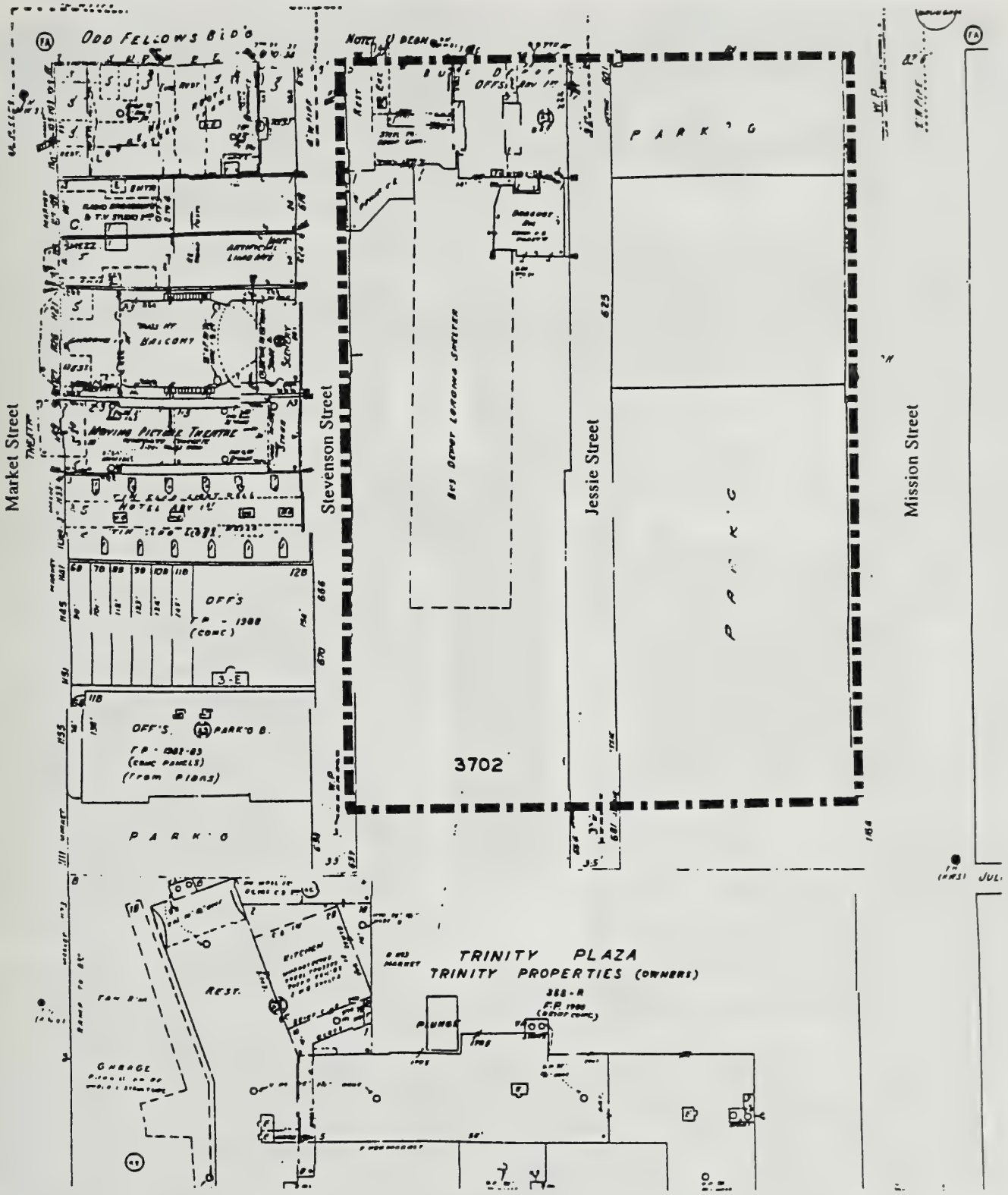
Seventh Street/Mission Street Parcels
San Francisco, California

BASELINE

91315-LO 4/18/95

SANBORN MAP - 1990

Figure 9



Legend

Approximate Project Site Boundary

Approximate

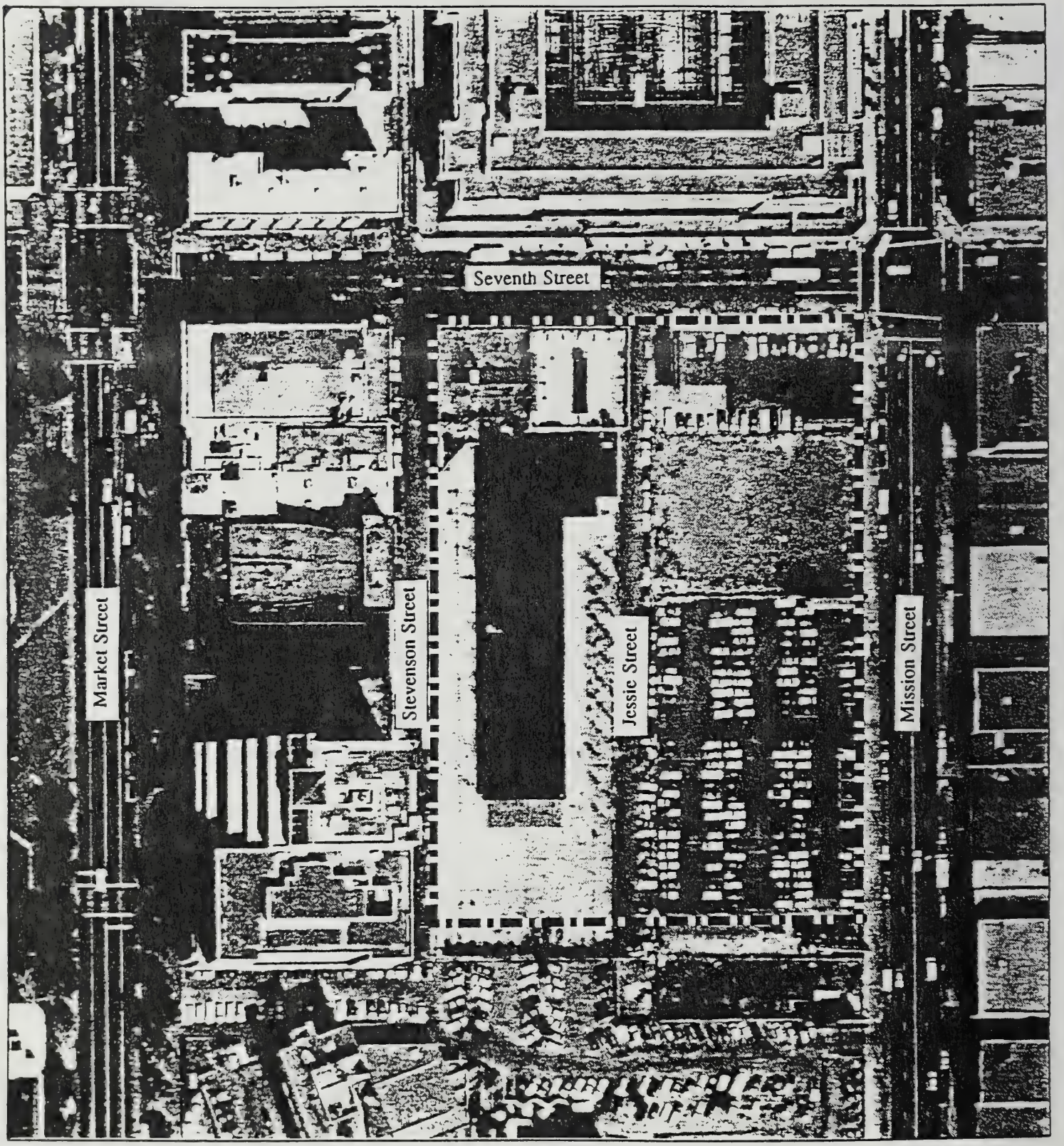
0 100 Feet

Seventh Street/Mission Street Parcels
San Francisco, California

BASELINE

AERIAL PHOTO - 1993

Figure 10



Legend

Approximate Project Site Boundary

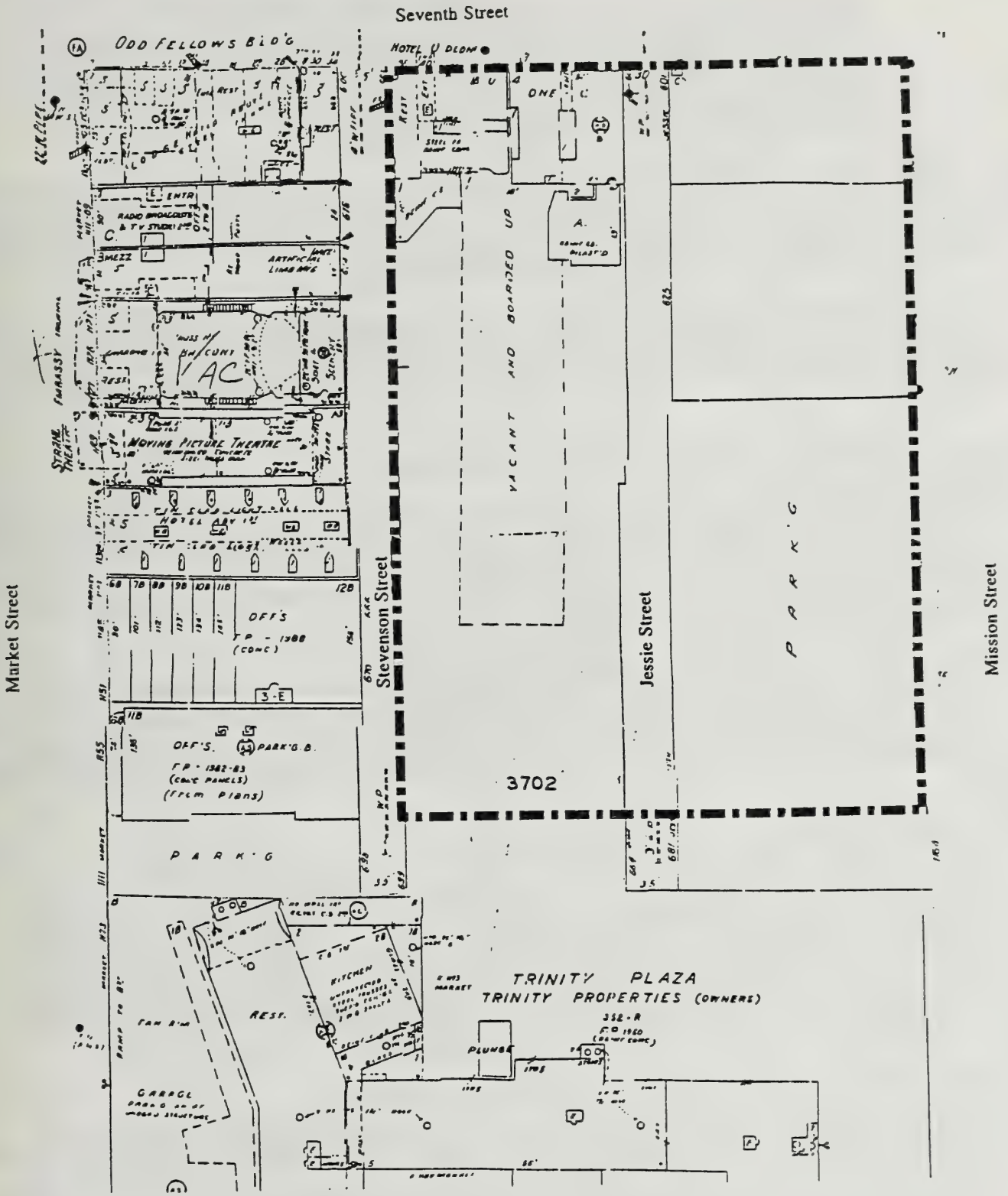
0 115 Feet

Seventh Street/Mission Street Parcels
San Francisco, California

BASELINE

SANBORN MAP - 1994

Figure 11



Legend

Approximate Project Site Boundary

Approximate

0 100 Feet

Seventh Street/Mission Street Parcels
San Francisco, California

BASELINE

- California EPA Cortese List - Hazardous Waste Substance Site List
- California State Water Regional Control Board Aboveground Storage Tank Database
- California State Water Regional Control Board Underground Storage Tank Registrations Database
- Emergency Response Notification System (ERNS) Database

A description of the records searched, the search parameter for each type of record, and search results are provided in Appendix A. The search results were used to assess if any sites associated with hazardous materials within one-eighth mile of the project site could have potentially affected the quality of the subsurface soils or groundwater at the project site.

Twenty-five sites associated with hazardous materials were identified within one-eighth mile of the project site (Table 2, Figure 12). A file review of available information for these sites was conducted on 27 May 1995 at the San Francisco Department of Public Health (SFDPW), Hazardous Materials Division offices.

Department of Toxic Substances Control, Cal-Sites List

Seventeen sites within one-eighth mile of the site were identified on the State Department of Toxic Substances Control (DTSC) Cal-Sites list (Table 3). These sites were identified by DTSC during a drive-by reconnaissance as having the potential for hazardous material releases. Three of those sites were within the project Site boundaries. DTSC later delisted five of those sites and determined that no further action was required at six others.

After further review, DTSC determined that a preliminary environmental assessment would be required at the remaining seven sites (including two sites within the Project Site boundaries), but left them as a low priority. Two of these sites are located within the Project Site, four are located approximately 400 feet north of the Site, and one is located approximately 500 feet southeast of the Site.

Sites 1 and 3 - 1110-1112 and 1150-1152 Mission Street

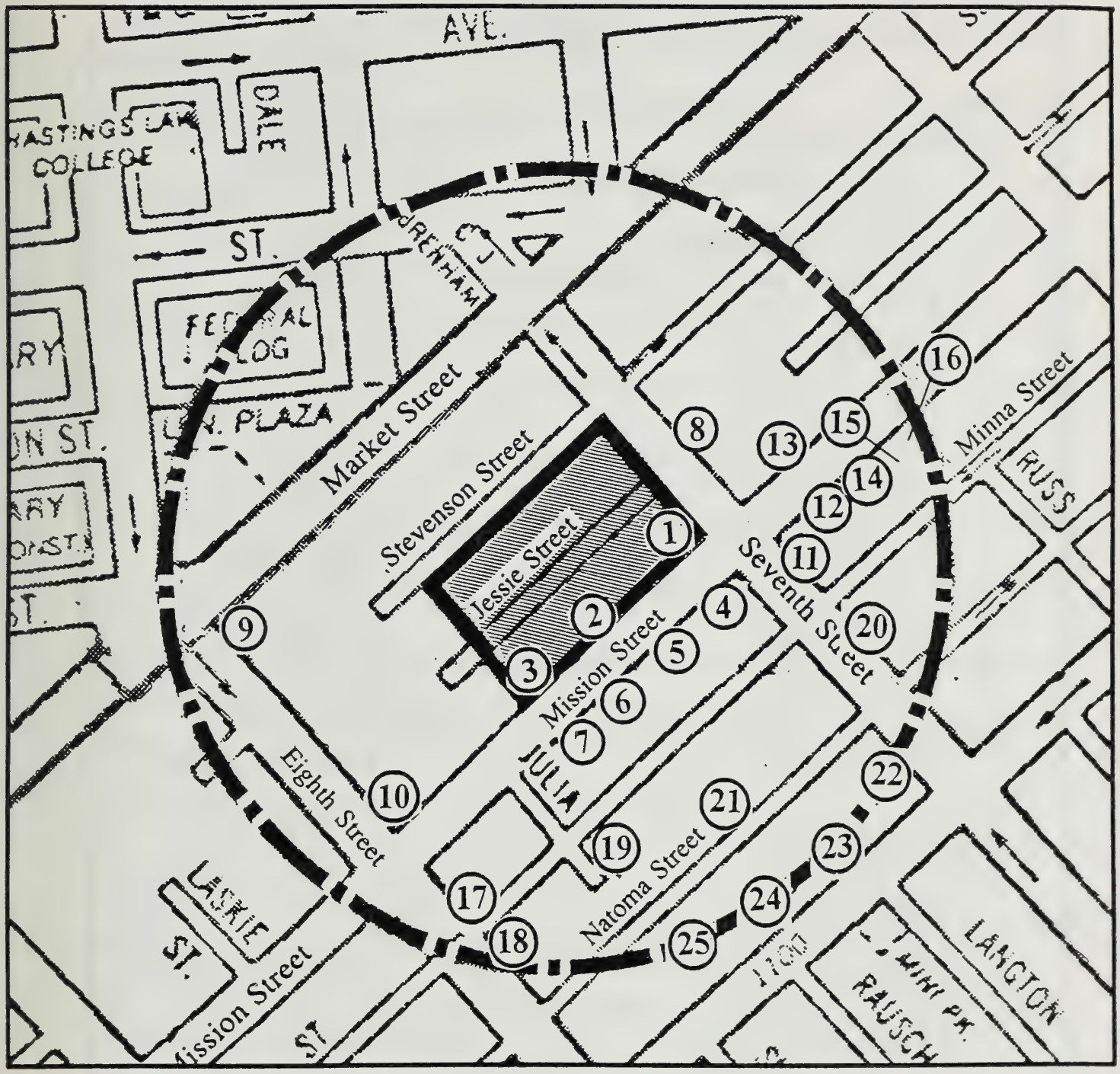
These two sites, which are located within the Project Site, were historically used as a lamp factory and electronic equipment factory, respectively. The lamp factory building (1110-1112 Mission) was converted to a Greyhound Package Express building sometime between 1950 and 1974; it was torn down sometime between 1979 and 1986. The electronic equipment factory was torn down between 1959 and 1969; this site is currently a parking lot. No information about these sites was available from SFDPH files.

Sites 13, 14, and 15 - 1064-1068, 1065, and 1063 Mission Street

These three sites, located approximately 400 feet north of the Project Site, are crossgradient from the Project Site. An environmental investigation was performed at the 1064-1068 Mission Street site (Geomatrix, 1992), which is owned by the General Services Administration. Soil and groundwater samples were collected from three borings at the 1064-1068 Mission site in June 1992. Soil samples from these borings contained total petroleum hydrocarbons (TPH) as oil at concentrations up to 3,200 mg/kg. The groundwater samples contained up to 900 μg/L of TPH as oil. The groundwater

SITES IDENTIFIED IN REGULATORY AGENCY RECORDS WITHIN ONE-EIGHTH MILE RADIUS OF PROJECT SITE

Figure 12



Legend

Project Site

One-Eighth Mile Radius

See Table 2 for Names and Addresses

0 300 Feet

Seventh Street/Mission Street Parcels
San Francisco, California

BASELINE

91315-LO 4/20/95

TABLE 2

SITES IDENTIFIED IN REGULATORY AGENCY RECORDS
Within a One-Eighth-Mile Radius of the Project Site

Site No.	Site Name/Address	Regulatory Records Identified
1	W.B. Baker Co. 1110-1112 Mission Street (on-Site)	Cal-Sites
2	Gerald Moss 1124 Mission Street (on-Site)	Cal-Sites
3	U.S. Hoffman Machinery Corp./Appleton Electric Co. 1150-1152 Mission (on-Site)	Cal-Sites
4	Babe Zanca Service, Inc. 1127 Mission Street	LUST
5	Riley Precision Tool Co. 1135-1137 Mission Street	Cal-Sites
6	Bower Manufacturing Co. 1139 Mission Street	Cal-Sites
7	California Building Maintenance Co. 1145 Mission Street	LUST, Cortese
8	U.S. Court of Appeals 99 Seventh Street	LUST
9	Trinity Properties 1169 Market Street	RCRA-Large Generator
10	Mission Substation 66 Eighth Street	RCRA-Large Generator
11	Emile Battezato 109 Seventh Street	LUST
12	T.J. Topper Co. 1089 Mission Street	Cal-Sites
13	General Services Administration/Irvine Jachens 1064-1068 Mission Street	Cal-Sites, LUST, Cortese
14	Advertiser's Service 1065 Mission Street	Cal-Sites
15	Strathmore Printing Co. 1063 Mission Street	Cal-Sites
16	Chevron/The Process Company/Bubble Car Wash 1045 Mission Street	Cal-Sites, LUST, Cortese

Table 2, *continued*

Site No.	Site Name/Address	Regulatory Records Identified
17	Lewis Sheet Metal Works 140 Eighth Street	Cal-Sites
18	Terrapin Diagnostics 165 Eighth Street #306	RCRA-Large Generator
19	Frank Schabert 687 Minna Street	Cal-Sites
20	West Coast Electrical Works, Ltd. 166 Seventh Street	Cal-Sites
21	Becline Tape Printing 630 Natoma Street	Cal-Sites
22	Shell 1100 Howard Street	LUST, Cortese
23	Lobranco Brothers 1108 Howard Street	Cal-Sites
24	American Printing Lithography 1144-48 Howard Street	Cal-Sites
25	Metallurgical Lab 1142 Howard Street	Cal-Sites

Notes: LUST = Leaking Underground Storage Tank list.
See Figure 12 for site locations.

TABLE 3

SITES IDENTIFIED ON DTSC CAL-SITES LIST
Seventh Street/Mission Street Parcels

Site No.	Site Name/Address	Status
1	W.B. Baker Co. 1110-1112 Mission Street (on Site)	Preliminary Assessment Required - Low Priority
2	Gerald Moss 1124 Mission Street (on Site)	Delisted
3	U.S. Hoffman Machinery Corp./Appleton Electric Co. 1150-1152 Mission (on Site)	Preliminary Assessment Required - Low Priority
5	Riley Precision Tool Co. 1135-1137 Mission Street	No Further Action Required
6	Bower Manufacturing Co. 1139 Mission Street	Delisted
12	T.J. Topper Co. 1089 Mission Street	Delisted
13	General Services Administration/Irvine Jachens 1064-1068 Mission Street	Preliminary Assessment Required - Low Priority
14	Advertiser's Service 1065 Mission Street	Preliminary Assessment Required - Low Priority
15	Strathmore Printing Co. 1063 Mission Street	Preliminary Assessment Required - Low Priority
16	Chevron/The Process Company/Bubble Car Wash 1045 Mission Street	Delisted
17	Lewis Sheet Metal Works 140 Eighth Street	Preliminary Assessment Required - Low Priority
19	Frank Schabert 687 Minna Street	Delisted
20	West Coast Electrical Works, Ltd. 166 Seventh Street	No Further Action Required
21	Becline Tape Printing 630 Natoma Street	No Further Action Required
23	Lobranco Brothers 1108 Howard Street	No Further Action Required
24	American Printing Lithography 1144-48 Howard Street	No Further Action Required
25	Metallurgical Lab 1142 Howard Street	No Further Action Required

Note: See Figure 12 for site locations.

samples also contained three volatile organic compounds, PCE (42 µg/L), TCE (7 µg/L), and cis-1,2-DCE (42 µg/L) at levels above the Maximum Contaminant Levels (5 µg/L, 5 µg/L, and 6 µg/L, respectively). The environmental investigation did not identify the source of this contamination, so it is unknown if the source is upgradient or crossgradient from the Project Site. No information was available from SFDPH on the sites at 1063 Mission and 1065 Mission.

Site 17 - 140 Eighth Street

This site, the former location of Lewis Sheet Metal Works, is downgradient from the Project Site. No information about this site was available in SFDPH files.

Leaking Underground Storage Tank (LUST) List/Cortese List

Six sites within one-eighth mile of the Site were listed on the State Leaking Underground Storage Tank (LUST) and/or Cortese lists, due to leaking underground petroleum storage tanks. They are listed in Table 3 and discussed below. All of the sites are either downgradient or cross-gradient from the Project Site.

TABLE 4

SITES IDENTIFIED ON LUST LIST
Within One-Eighth Mile of Project Site

Site No.	Site Name/Address
4	Babe Zanca Service, Inc. 1127 Mission Street
7	California Building Maintenance 1145 Mission Street
8	U.S. Court of Appeals 99 Seventh Street
11	Emile Battazato 109 Seventh Street
16	Chevron 1045 Mission Street
22	Shell 1100 Howard Street

Note: See Figure 12 for site locations.

Site 4 - Babe Zanca Service, Inc., 1127 Mission Street

Three underground diesel storage tanks were removed from this site in January 1991. Total petroleum hydrocarbons as diesel (TPH-g) was identified in excavation soils at up to 1,800 mg/kg. The tank area was overexcavated, and the site is awaiting closure from the RWQCB.

Site 7 - California Building Maintenance, 1145 Mission Street

One 500-gallon gasoline storage tank was removed from this site in January 1990. Up to 47 mg/kg of TPH as gasoline (TPH-g) and 37.7 mg/kg of total lead was identified in excavation soils. RWQCB determined that no further action was required and the case was closed on 28 March 1995.

Site 8 - U.S. Court of Appeals, 99 Seventh Street

Two 4,000-gallon diesel/fuel oil tanks were removed from this site in 1993 as part of renovation work on the building. Soil samples from the excavation identified up to 60 mg/kg of oil and grease. No further action was required by RWQCB.

Site 11 - Emile Battezato, 109 Seventh Street

In April 1994, a 1,500-gallon underground fuel oil tank was removed from this site. Concentrations of TPH-d at up to 952 mg/kg were identified in soil samples from the excavation. All soil from the concrete tank vault was removed and treated, and the case was closed by SFDPH in June 1994.

Site 16 - Chevron, 1045 Mission Street

Three 10,000-gallon underground gasoline tanks were removed from this site in July 1988 as part of station demolition procedures. TPH-g at concentrations of up to 5.1 mg/kg and traces of benzene, toluene, ethylbenxene, and xylenes (BTEX) were identified in soils in the concentration. No further investigation or remediation has been taken; the case is awaiting closure from SFDPH.

Site 22 - Shell, 1100 Howard Street

Four gasoline tanks (two 5,000- and two 8,000-gallon capacity) and one waste oil tank (550-gallon capacity) were removed from this site in 1988 as part of station demolition procedures. TPH-g was identified in excavation soils at concentrations up to 3,700 mg/kg. Soils in the tank area were overexcavated, and five groundwater monitoring wells were installed. The most recent groundwater monitoring report (March 1995) showed that TPH-g was present in groundwater at concentrations up to 560 μg/L, and benzene at up to 33 μg/L. Groundwater monitoring is continuing on a quarterly basis.

RCRA Hazardous Waste Generators List

Three sites within one-eighth mile of the Project Site were listed on the RCRA Hazardous Waste Generators list. Trinity Properties (1169 Market Street, Site 9), the Mission Substation (66 Eighth Street, Site 10), and Terrapin Diagnostics (165 Eighth Street, Site 18) were listed on the RCRA Large Generators List of sites which generate more than 1,0000 kg/month of non-acutely hazardous waste or 1 kg/month of acutely hazardous waste. All three sites are crossgradient or downgradient from the Project Site. No records of violations or corrective actions were identified in the environmental database review. No further information about these sites were available in SFDPH files.

CONCLUSIONS

- A geotechnical investigation conducted in the Site vicinity suggests that fill materials of unknown origin may underlie the Site to a depth of ten to twelve feet. As the fill is uncharacterized, it is possible that this fill may contain contaminants. Typical contaminants found in fill in the Site area are lead and petroleum products.

- Current and historical land uses present the potential for subsurface contamination at the Site. Lots 15 and 16 on Parcel 1 and Lots 32 and 33 on Parcel 2 were historically used as blacksmith and tin shops. Lot 5 on Parcel 1 and Lot 33 on Parcel 2 were historically used as print shops. Lots 32-38 on Parcel 2 were historically used as factories, including a lamp factory, a paint shop, a tent and awning factory, and an electrical equipment factory. The presence of parking lots on Lot 5 of Parcel 1 and Lots 29, 31, and 34-38 on Parcel 2 could have affected shallow soils at the site.

- A groundwater investigation in the Site vicinity indicated that groundwater near the Site (crossgradient) contained concentrations of petroleum hydrocarbons (as diesel and oil). Three volatile organic compounds (PCE, TCE, and cis-1,2-DCE) were detected at levels above the Maximum Contaminant Level. As the source of this contamination is unknown, it is unknown whether groundwater at the Site may also contain these contaminants.

RECOMMENDATIONS

- It is unknown whether the quality of groundwater underlying the Site could have been affected by releases of metals, petroleum hydrocarbons, and/or organic compounds at the Site and vicinity. If SFRA should wish to ascertain the quality of groundwater underlying the Site, a groundwater monitoring well could be installed in the downgradient (southeast) corner of the Site and sampled for metals, petroleum hydrocarbons, and organic compounds.

- Soils that would be excavated as part of any Site development should be sampled and analyzed for metals, petroleum hydrocarbons, and organic compounds to determine health and safety plan requirements for construction workers and to determine soil disposal options. Four samples should be collected from random locations at each Parcel. Two samples should be collected from each location: at two feet below ground surface (bgs) and at the groundwater interface. All soil samples should be analyzed for Title 26 metals and volatile and semi-volatile organic compounds (EPA Methods 8240 and 8270); those samples found to contain a total metal concentration exceeding ten times the California threshold level for that soluble metal should be analyzed for soluble concentrations. All shallow soil samples (2 feet bgs) should also be analyzed for petroleum hydrocarbons.

LIMITATIONS

The services BASELINE has performed in connection with this study have been performed in accordance with generally accepted principles and practices applicable to the profession at this time. The data presented were obtained from environmental database reports, reviewing public agency files, historical aerial photographs, historical maps, and performing a site reconnaissance. We make no other warranty or representation, expressed or implied, for the work in this report.

REFERENCES

Geomatrix Consultants, 1992, *Geotechnical and Environmental Study, 1064 and 1068 Mission Street Properties, San Francisco, California*, 24 July.

Pacific Aerial Surveys, 1995, Historical Aerial Photograph Review, 20 April.

San Francisco Department of Public Health (SFDPH), 1995, Local Oversight Program, review of departmental files, 27 April.

Sanborn Fire Insurance Company, 1886, 1899, 1913, 1949, 1950, 1974, 1990, and 1994, Fire Insurance Maps.

United States Geological Survey (USGS), 1973, San Francisco North quadrangle, 7.5-minute topographical map.

Vista Environmental Information, 1995, regulatory agency environmental database report, 11 April.

APPENDIX A

ENVIRONMENTAL DATABASE REPORT

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SITE ASSESSMENT PLUS REPORT

PROPERTY INFORMATION	CLIENT INFORMATION
Project Name/Ref #: 913115-L0 GREYHOUND TERMINAL 36-98 7TH ST 1104-1164 MISSION ST SAN FANCISCO, CA 94103 Cross Street: MISSION Latitude/Longitude: (37.779331, 122.410488)	TODD TAYLOR BASELINE ENV -EMMERYVILLE 5900 HOLLIS ST STE D EMERYVILLE, CA 94608

Site Distribution Summary

Agency / Database - Type of Records			within 1/8 mile	1/8 to 1/4 mile	1/4 to 1/2 mile	1/2 to 1 mile
A) Databases searched to 1 mile:						
US EPA	NPL	National Priority List	0	0	0	0
US EPA	CORRACTS	RCRA Corrective Actions	0	0	0	0
US EPA	TSD	RCRA permitted treatment, storage, disposal facilities	0	0	0	0
STATE	SPL	State equivalent priority list	0	1	0	0
B) Databases searched to 1/2 mile:						
US EPA	CERCLIS	Sites under review by US EPA	0	1	1	-
STATE	SCL	State equivalent CERCLIS list	36	90	229	-
STATE REG CO	LUST	Leaking Underground Storage Tanks	4	8	29	-
STATE/ REG/CO	SWLF	Permitted as solid waste landfills, incinerators, or transfer stations	0	0	0	-
STATE	DEED RSTR	Sites with deed restrictions	0	0	0	-
REGIONAL	NORTH BAY	Sites on North Bay Toxic List	1	1	0	-
STATE	CORTESE	State index of properties with hazardous waste	4	6	39	-
STATE	TOXIC PITS	Toxic Pits cleanup facilities	0	0	0	-
C) Databases searched to 1/4 mile:						
US EPA	RCRA Viol	RCRA violations/enforcement actions	0	0	-	-
US EPA	TRIS	Toxic Release Inventory database	0	0	-	-
STATE	UST/AST	Registered underground or aboveground storage tanks	7	22	-	-
D) Databases searched to 1/8 mile:						
US EPA	ERNS	Emergency Response Notification System of spills	0	-	-	-
US EPA	GNRTR	RCRA registered small or large generators of hazardous waste	9	-	-	-

This geographic database search meets the American Society for Testing Materials (ASTM) standards for a government records review. A (-) indicates the search distance exceeds ASTM search parameters.

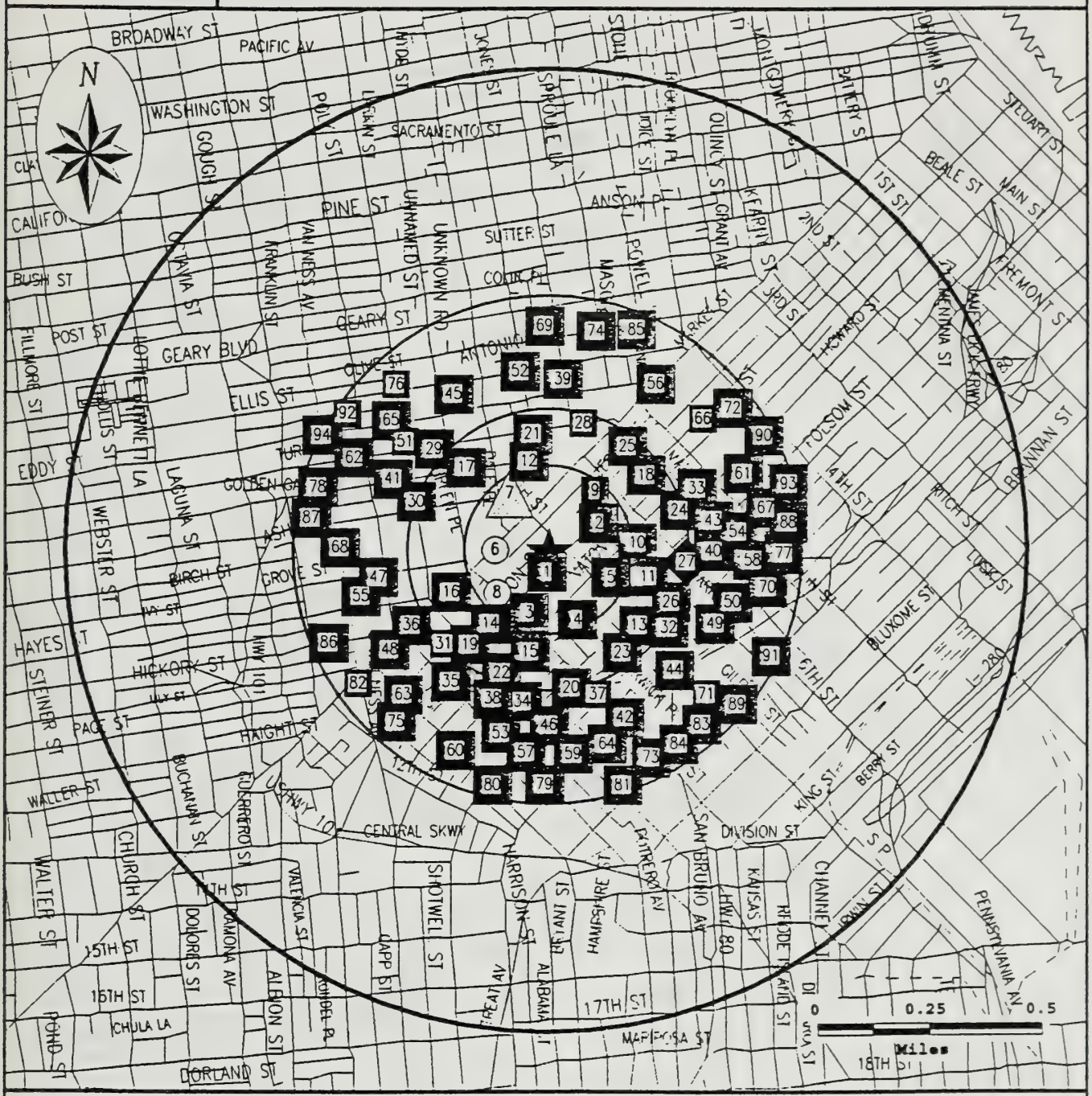
LIMITATION OF LIABILITY

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NOTES

SITE ASSESSMENT PLUS REPORT

Map of Sites within One Mile



Subject Site	Category: Databases Searched to:	A 1 mi.	B 1/2 mi.	C 1/4 mi.	D 1/8 mi.
★	Single Sites	◆	■	△	○
	Multiple Sites	◆	■	△	○
		NPL, SPL, TSD, CORRACTS	CERCLIS, SCL, LUST, SWLF	TRIS, UST	ERNS, GENERATORS

Roads
Highways
Railroads
Rivers or Water Bodies
Utilities

If additional databases are listed in the cover page of the report they are also displayed on this map. The map symbol used corresponds to the database category letter A,B,C,D.

For More Information Call VISTA Environmental Information at **1 - 800 - 767 - 0403**

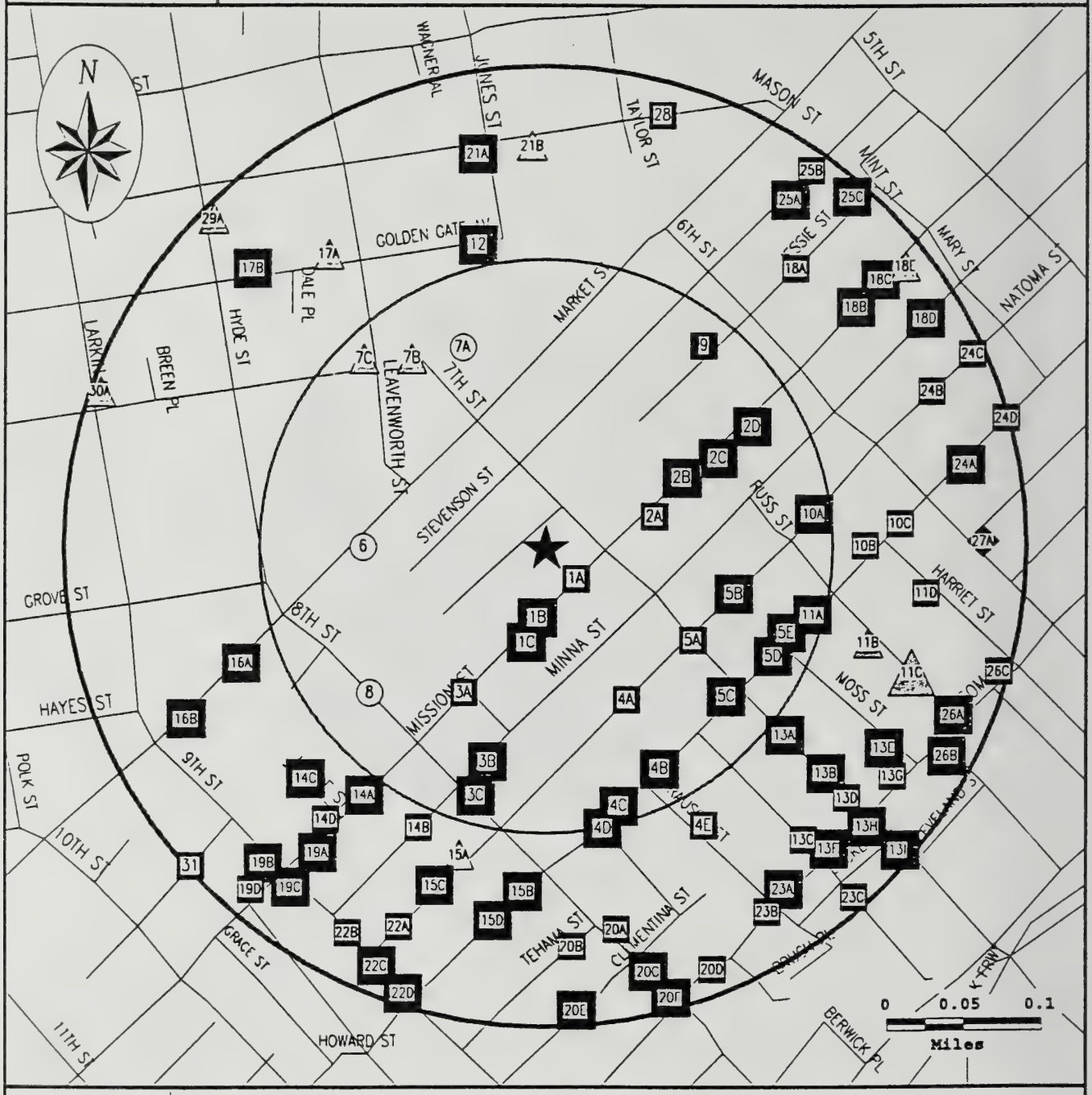
Report ID: **999931-001**

Date of Report: **April 11, 1995**

SITE ASSESSMENT PLUS REPORT

VISTA

Map of Sites within Quarter Mile



Subject Site	Category: / Databases Searched to:	A 1 mi.	B 1/2 mi.	C 1/4 mi.	D 1/8 mi.
★	Single Sites	◆	■	△	○
	Multiple Sites	◆	■	△	○
		NPL, SPL, TSD, CORRACTS	CERCLIS, SCL, LUST, SWLF	TRIS, UST	ERNS, GENERATORS

Roads
Highways
Railroads
Rivers or Water Bodies
Utilities

If additional databases are listed in the cover page of the report they are also displayed on this map. The map symbol used corresponds to the database category letter A,B,C,D.

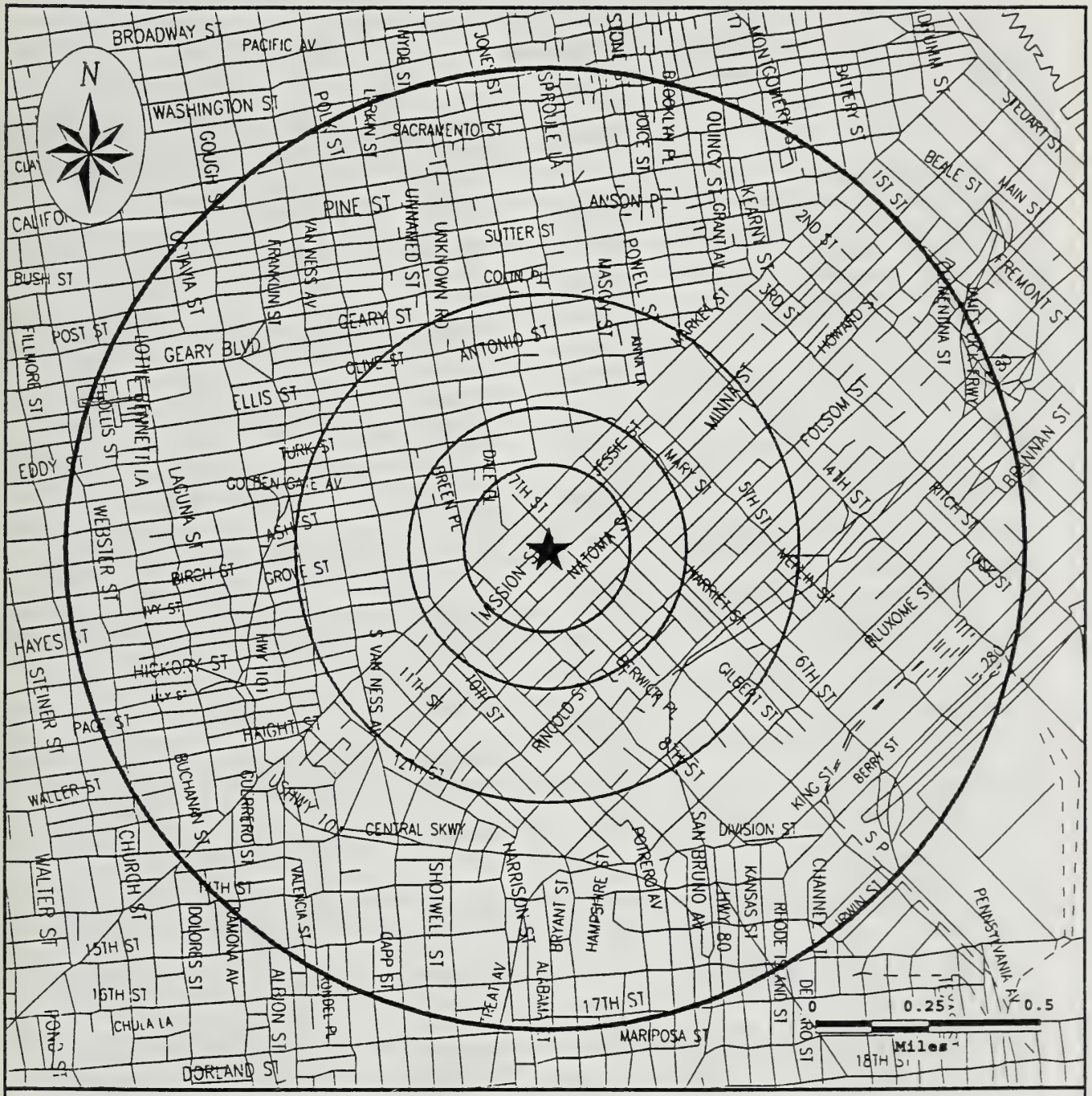
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Report ID: **999931-001**

Date of Report: **April 11, 1995**

SITE ASSESSMENT PLUS REPORT

Street Map



Subject Site

Roads, Highways, Rivers, Water Bodies

Railroads, Utilities

SITE ASSESSMENT PLUS REPORT

SITE INVENTORY

MAP ID	PROPERTY AND THE ADJACENT AREA (within 1/8 mile)	VISTA ID / DISTANCE / DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
1A	W.B. BAKER CO 1110-1112 MISSION SAN FRANCISCO, CA 94103	1169862 0.00 MI ADJACENT						X											
1B	MOSS, GERALD 1124 MISSION SAN FRANCISCO, CA 94103	1590902 0.00 MI ADJACENT						X											
1B	BABE ZANCA SERVICE INC. 1127 MISSION SAN FRANCISCO, CA 94103	4013206 0.00 MI ADJACENT															X		
1B	RILEY PRECISION TOOL CO. 1135-1137 MISSION SAN FRANCISCO, CA 94103	1169893 0.00 MI ADJACENT						X											
1C	BOWER MFG. CO. 1139 MISSION SAN FRANCISCO, CA 94103	1590904 0.00 MI ADJACENT						X											
1C	CAL BUILDING MAINTENANCE CO. 1145 MISSION SAN FRANCISCO, CA 94103	4013213 <0.01 MI S															X		
1C	CA BUILDING MAINTENANCE 1145 MISSION ST SAN FRANCISCO, CA 94103	1222572 <0.01 MI S							X				X						
2A	T.J. TOPPER CO. 1089 MISSION ST. SAN FRANCISCO, CA 94103	1594796 0.01 MI E						X											
2B	IRVINE JACHENS 1068 MISSION SAN FRANCISCO, CA 94103	1590899 0.03 MI NE						X											
2B	GENERAL SERVICES ADMIN. 1064 MISSION ST SAN FRANCISCO, CA 94103	3767706 0.04 MI NE							X			X							
2B	ADVERTISER'S SERVICE 1065 MISSION SAN FRANCISCO, CA 94102	1590898 0.04 MI E						X											
2B	STRATHMORE PRINTING CO. 1063 MISSION SAN FRANCISCO, CA 94103	1590897 0.04 MI E						X											
2C	CHEVRON (FORMER UNOCAL) 1045 MISSION ST SAN FRANCISCO, CA 94103	1586515 0.06 MI E							X				X						
2C	PROCESS COMPANY, THE 1045 MISSION SAN FRANCISCO, CA 94103	1590896 0.06 MI E						X											

MAP ID	PROPERTY AND THE ADJACENT AREA (within 1/8 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS		RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
2C	BUBBLE CAR WASH 1045 MISSION SAN FRANCISCO, CA 94103	4013186 0.06 MI E																X		
2C	PROCESS COMPANY THE 1045 MISSION ST SAN FRANCISCO, CA 94103	3777783 0.06 MI E											X							
2C	HANNAN, JAS P 1037 MISSION SAN FRANCISCO, CA 94103	3890005 0.07 MI NE						X												
2D	ROWLAND'S AUTO REPAIR 1023 MISSION ST SAN FRANCISCO, CA 94103	361582 0.09 MI NE																		X
2D	DIAGNOSTIC AUTO CLINIC 1023 MISSION SAN FRANCISCO, CA 94103	4013181 0.09 MI NE																X		
2D	DIAGNOSTIC AUTO CLINIC 1023 MISSION ST SAN FRANCISCO, CA 94103	121017 0.09 MI NE																		X
2D	GARRETT GOLDBERG PAINT CO. 1019 MISSION ST. SAN FRANCISCO, CA 94103	1594795 0.09 MI NE						X												
2D	1009 MISSION STRET 1009 MISSION ST. SAN FRANCISCO, CA 94103	3890801 0.11 MI NE						X												
3A	U.S. HOFFMAN MACHINERY CORP. 1150-1152 MISSION SAN FRANCISCO, CA 94103	1169888 0.05 MI SW						X												
3B	APPLETON ELECTRIC CO. 655 MINNA SAN FRANCISCO, CA 94103	1169658 0.07 MI S						X												
3B	SCHABERT, FRANK 687 MINNA SAN FRANCISCO, CA 94103	1169708 0.09 MI S						X												
3C	LEWIS SHEET METAL WKS 140 8TH SAN FRANCISCO, CA 94103	1591749 0.11 MI SW						X												
3C	TERRAPIN DIAGNOSTICS 165 EIGHTH STREET #306 SAN FRANCISCO, CA 94103	420208 0.11 MI S																		X
4A	BECLINE TAPE PRINTING 630 NATOMA SAN FRANCISCO, CA 94103	1168870 0.05 MI SE						X												
4B	SIMPLEX FILLER CO 1144 HOWARD STREET SAN FRANCISCO, CA 94103	1169771 0.10 MI SE						X												
4B	PILARA, GIATANO 1141 HOWARD SAN FRANCISCO, CA 94103	1169697 0.10 MI SE						X												
4B	METALLURGICAL LAB 1142 HOWARD SAN FRANCISCO, CA 94103	1169532 0.10 MI SE						X												

MAP ID	PROPERTY AND THE ADJACENT AREA (within 1/8 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
4B	AMERICAN PRINTING LITHOGRAPHY 1144–48 HOWARD SAN FRANCISCO, CA 94103	1168864 0.10 MI SE						X											
4B	S.F. LIGHTING SUPPLY CO. 1147 HOWARD SAN FRANCISCO, CA 94103	1170010 0.10 MI SE						X											
4C	MARIER PRINTING 1164 HOWARD ST SAN FRANCISCO, CA 94103	3197222 0.11 MI S																	X
4C	AVAKIAN, JOHN 1162 HOWARD SAN FRANCISCO, CA 94103	1170050 0.12 MI S						X											
4D	SPENCER KENYON 1173 HOWARD SAN FRANCISCO, CA 94103	1169882 0.12 MI S						X											
5A	WEST COAST ELECTRIC WORKS LTD 166 7TH SAN FRANCISCO, CA 94103	1169657 0.05 MI SE						X											
5B	KEBELY, F. T. 580 NATOMA SAN FRANCISCO, CA 94103	1168762 0.06 MI E						X											
5B	A-1 METAL POLISHING INC 574 NATOMA SAN FRANCISCO, CA 94103	1169624 0.07 MI E						X											
5C	SHELL 1100 HOWARD ST SAN FRANCISCO, CA 94103	935529 0.09 MI SE							X				X				X		
5C	LOBRANCO BROS. 1108 HOWARD SAN FRANCISCO, CA 94103	1169587 0.09 MI SE						X											
5D	MOORE-MONTROY ELECTRIC CO. 1080 HOWARD SAN FRANCISCO, CA 94103	1169995 0.10 MI E						X											
5D	ESSEX WIRE CORP. 1077 HOWARD SAN FRANCISCO, CA 94103	1169393 0.10 MI E						X											
5E	SANT AUTO REPAIR 1072 HOWARD ST SAN FRANCISCO, CA 94103	368232 0.10 MI E																	X
5E	CITY PAINTS 1072 HOWARD ST SAN FRANCISCO, CA 94103	111252 0.10 MI E																	X
5E	HAVEN SAW TOOL CO. 1072-76 HOWARD SAN FRANCISCO, CA 94103	1169896 0.11 MI E						X											
5F	FULLER, H. B. CO. 1060 HOWARD SAN FRANCISCO, CA 94103	1169169 0.11 MI E						X											
6	TRINITY PROPS 1169 MARKET ST SAN FRANCISCO, CA 94103	430924 0.06 MI W																	X

MAP ID	PROPERTY AND THE ADJACENT AREA (within 1/8 mile)	VISTA ID / DISTANCE / DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
7A	TENDERLOIN NEIGHBORHOOD DEV CORP 44 MCALLISTER ST SAN FRANCISCO, CA 94102	419690 0.08 MI NW																	X
7B	METROPOLITAN PARKING CORP.#506 80 MCALLISTER SAN FRANCISCO, CA 94102	4032843 0.09 MI NW															X		
7C	UNIV. OF CALIFORNIA - HASTINGS 100 MCALLISTER SAN FRANCISCO, CA 94102	4032844 0.11 MI NW															X		
8	MISSION SUBSTATION 66 EIGHTH STREET SAN FRANCISCO, CA 94103	277404 0.09 MI SW																	X
9	DOBSON INC 532 JESSIE ST SAN FRANCISCO, CA 94103	1168014 0.10 MI NE						X											
10A	HUBBELL HARVEY INC. 542 NATOMA SAN FRANCISCO, CA 94103	1169965 0.11 MI E						X											
10A	DUTTON ASBESTOS SUPPLY CO 532 NATOMA SAN FRANCISCO, CA 94103	1169374 0.12 MI E						X											
11A	PACIFIC MUSIC PRESS INC 1053 HOWARD SAN FRANCISCO, CA 94103	1169043 0.12 MI E						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID / DISTANCE / DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
4D	EDISON, THOMAS A. INC. 1174 HOWARD SAN FRANCISCO, CA 94103	1593982 0.13 MI S						X											
4E	PACIFIC ELEVATOR EQUIPMENT CO. 45 RAUSCH SAN FRANCISCO, CA 94103	1169880 0.15 MI SE						X											
10B	1028 HOWARD STREET 1028 HOWARD ST. SAN FRANCISCO, CA 94103	3890688 0.15 MI E						X											
10C	ALADDIN PRODUCTS 1014 HOWARD SAN FRANCISCO, CA 94103	1169125 0.17 MI E						X											
11B	RUFF CONSTRUCTION 124 RUSS SAN FRANCISCO, CA 94103	4039834 0.16 MI E															X		
11C	ST. AUTO SERVICE CENTER 160 RUSS SAN FRANCISCO, CA 94103	398331 0.18 MI E															X		

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
11C	EMSCO ELECTRIC CO. 175 RUSS SAN FRANCISCO, CA 94103	1258207 0.20 MI E															X		
11D	HOSKIN MUIR 30 HARRIET SAN FRANCISCO, CA 94103	1169590 0.19 MI E						X											
12	GOLDEN GATE PRESS 117 GOLDEN GATE AVENUE SAN FRANCISCO, CA 94102	1168918 0.13 MI N						X											
12	PARKING LOT 99 GOLDEN GATE AVE SAN FRANCISCO, CA 94102	1584995 0.13 MI N							X				X						
12	MILTON MEYER, PARKING LOT 99 GOLDEN GATE SAN FRANCISCO, CA 94102	4027865 0.15 MI N															X		
13A	AVCAR 229 7TH SAN FRANCISCO, CA 94103	4017386 0.13 MI SE															X		
13A	ADAMS J D MANUFACTURING CO 230 7TH SAN FRANCISCO, CA 94103	4285768 0.14 MI SE						X											
13B	MONARCH IRON WORKS 262 7TH SAN FRANCISCO, CA 94103	1591720 0.16 MI SE						X											
13B	NATIONAL VULCANIZED FIBRE CO 273 7TH SAN FRANCISCO, CA 94103	1169260 0.17 MI SE						X											
13B	MASTER ELECTRIC CO 270 7TH SAN FRANCISCO, CA 94103	1591721 0.17 MI SE						X											
13B	BUNTING BRASS BRONZE CO 277 7TH SAN FRANCISCO, CA 94103	1169409 0.18 MI SE						X											
13C	SMOOT - HOLMAN CO. 89 LANGTON SAN FRANCISCO, CA 94103	1169999 0.19 MI SE						X											
13D	TROJAN TOOL SUPPLY CO 290 7TH SAN FRANCISCO, CA 94103	1169827 0.19 MI SE						X											
13E	NORDSON REX PROPERTY 90 MOSS ST SAN FRANCISCO, CA 94103	3781404 0.19 MI SE							X										
13E	M R PROPERTIES 90 MOSS SAN FRANCISCO, CA 94103	4034890 0.19 MI SE															X		
13F	SAN FRANCISCO DRUG CO INC 1122-1128 FOLSOM SAN FRANCISCO, CA 94103	1169195 0.20 MI SE						X											
13F	THORSEN WAREHOUSE 1122 FOLSOM SAN FRANCISCO, CA 94103	1170112 0.21 MI SE						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
13G	M R PROPERTIES 1086 FOLSOM STREET SAN FRANCISCO, CA 94103	3781308 0.21 MI SE							X										
13H	NORTHERN CHEMICAL PRODUCTS CORP 1099 FOLSOM SAN FRANCISCO, CA 94103	1593422 0.21 MI SE						X											
13H	MAILLER SEARLES INC 300 7TH SAN FRANCISCO, CA 94103	1591722 0.21 MI SE						X											
13H	ARCO SERVICE STATION 1101 FOLSOM SAN FRANCISCO, CA 94103	4026804 0.22 MI SE															X		
13H	HARRY LOW PROPERTY 1101 FOLSOM ST SAN FRANCISCO, CA 94103	3766729 0.22 MI SE											X						
13H	HARRY LOW PROPERTY 1101 FOLSOM ST SAN FRANCISCO, CA 94103	3078361 0.22 MI SE							X										
13I	PREVO-JOHNSTON PAINT CO 312 7TH SAN FRANCISCO, CA 94103	1591723 0.23 MI SE						X											
13I	VACANT BUILDING, 310 7TH ST 310 7TH SAN FRANCISCO, CA 94103	4017388 0.24 MI SE															X		
13I	NATIONAL EXPANSION JOINT CO 333 7TH SAN FRANCISCO, CA 94103	1169233 0.24 MI SE						X											
13I	REES BLOWPIPE MFG CO 340 7TH SAN FRANCISCO, CA 94103	1591724 0.25 MI SE						X											
14A	C W MARWEDEL 1235 MISSION SAN FRANCISCO, CA 94103	3890019 0.14 MI SW						X											
14A	PLASTIC CENTER CO (SITE 2) 1256 MISSION SAN FRANCISCO, CA 94103	1590911 0.14 MI SW						X											
14B	BIENTO FLAMEPROOFING CO. 729 MINNA SAN FRANCISCO, CA 94103	1169367 0.14 MI SW						X											
14C	ARROW TOOL AND DIE 29 LASKIE SAN FRANCISCO, CA 94103	1169537 0.15 MI SW						X											
14C	ALLIED TOOL MANUFACTURING CO 32 LASKIE SAN FRANCISCO, CA 94103	1169801 0.16 MI SW						X											
14D	SILVER-STAHL CORP. 1268 MISSION SAN FRANCISCO, CA 94103	1590912 0.17 MI SW						X											
15A	C.R. REICHEL ENGINEERING CO. 718 NATOMA SAN FRANCISCO, CA 94103	1238689 0.15 MI S															X		

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS		RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
15B	ETCHING CORP. OF CALIFORNIA 1208 HOWARD ST. SAN FRANCISCO, CA 94103	1168769 0.16 MI S						X												
15B	MERRILL REED LITHOGRAPHERS 1201 HOWARD STREET SAN FRANCISCO, CA 94103	1168827 0.16 MI S						X												
15C	FLAMORT CHEMICAL CO. 746 NATOMA SAN FRANCISCO, CA 94103	1169341 0.17 MI SW						X												
15C	VERNON X-RAY SUPPLY INC 747 NATOMA SAN FRANCISCO, CA 94103	1169989 0.17 MI S						X												
15D	CIBA CO. INC #2 1230 HOWARD SAN FRANCISCO, CA 94103	1169207 0.18 MI S						X												
15D	GUILFOY CORNICE WKS 1234 HOWARD SAN FRANCISCO, CA 94103	1169592 0.18 MI S						X												
15D	CALIFORNIA WIRE CLOTH CORP 1245 HOWARD SAN FRANCISCO, CA 94103	1169751 0.19 MI S						X												
16A	STANDARD IRON CO. METAL 1230 MARKET SAN FRANCISCO, CA 94102	1169477 0.15 MI W						X												
16A	SAN FRANCISCAN HOTEL 1231 MARKET SAN FRANCISCO, CA 94103	4034439 0.15 MI W																X		
16B	STATE COMP INSURANCE FUND 1275 MARKET SAN FRANCISCO, CA 94103	4034442 0.18 MI W																X		
16B	CITY WIDE LOCK SERVICE 1295 MARKET SAN FRANCISCO, CA 94103	1169815 0.21 MI W						X												
17A	YMCA 220 GOLDEN GATE SAN FRANCISCO, CA 94102	4027866 0.17 MI NW																X		
17B	SF FIRE DEPT 260 GOLDEN GATE AVE SAN FRANCISCO, CA 94102	935515 0.20 MI NW							X											
17B	SNAP-ON TOOLS-SITE 2 276 GOLDEN GATE SAN FRANCISCO, CA 94102	1169750 0.20 MI NW						X												
17B	CCSF-FIRE MGMT SERVICES 280 GOLDEN GATE AVE SAN FRANCISCO, CA 94102	3776791 0.20 MI NW											X							
17B	DEPARTMENT HEADQUARTERS 280 GOLDEN GATE AVE SAN FRANCISCO, CA 94102	3776792 0.20 MI NW											X							
17B	SF FIRE DEPT 280 GOLDEN GATE AVE SAN FRANCISCO, CA 94102	3776793 0.20 MI NW											X							

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
18A	INDEPENDENT ELEVATOR CO. 471 JESSIE SAN FRANCISCO, CA 94103	1594145 0.18 MI NE						X											
18B	MASON BROS 969 MISSION SAN FRANCISCO, CA 94103	1590894 0.19 MI NE						X											
18B	TOLEDO SCALE CO 968 MISSION SAN FRANCISCO, CA 94103	1590893 0.20 MI NE						X											
18C	U.S. SLICING MACHINE CO 949 MISSION SAN FRANCISCO, CA 94103	1590892 0.21 MI NE						X											
18C	DOHRMANN HOTEL SUPPLY CO. 948 MISSION ST SAN FRANCISCO, CA 94103	1594794 0.22 MI NE						X											
18D	SOMERVILLE PRESS, THE 449 MINNA SAN FRANCISCO, CA 94103	1168900 0.22 MI NE						X											
18D	BULMORE, G.D. 447 MINNA SAN FRANCISCO, CA 94103	1170006 0.23 MI NE						X											
18E	SF NEWSPAPER AGENCY 925 MISSION SAN FRANCISCO, CA 94103	4823576 0.23 MI NE															X		
19A	CASCADE PRESS 1273 MISSION SAN FRANCISCO, CA 94103	1590913 0.18 MI SW						X											
19A	ARMSTRONG BROS. - SITE 2 1275 MISSION SAN FRANCISCO, CA 94103	1590914 0.19 MI SW						X											
19B	ASSOCIATED RUBBER CO 79 9TH SAN FRANCISCO, CA 94103	1591779 0.21 MI SW						X											
19B	BEARING DISTRIBUTING CO 88 9TH SAN FRANCISCO, CA 94103	1169872 0.21 MI SW						X											
19B	ABC LETTER SHOP 84 9TH SAN FRANCISCO, CA 94103	1168860 0.21 MI SW						X											
19B	NATIONAL TWIST DRILL TOOL CO. 1310 MISSION SAN FRANCISCO, CA 94103	1590915 0.22 MI SW						X											
19B	WINTER BROS. 1310 MISSION SAN FRANCISCO, CA 94103	1590916 0.22 MI SW						X											
19C	BORDEN'S CHEMICAL SERVICE #2 108 9TH SAN FRANCISCO, CA 94103	1591767 0.21 MI SW						X											
19C	BRANDTJEN KLUGE INC 112 9TH SAN FRANCISCO, CA 94103	1169927 0.21 MI SW						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
19C	MARLIN ROCKWELL CORP. 1311 MISSION SAN FRANCISCO, CA 94103	1590917 0.22 MI SW						X											
19D	TRANSPARENT PRODUCTS CORP. 1328 MISSION ST. SAN FRANCISCO, CA 94103	1594799 0.23 MI SW						X											
20A	FAST SERVICE BINDERY 245 8TH ST SAN FRANCISCO, CA 94103	1168770 0.19 MI S						X											
20B	BEAUDRY, E.J.CO 725 TEHAMA SAN FRANCISCO, CA 94103	1169346 0.20 MI S						X											
20C	CALIFORNIA PRINTING CO 269 8TH SAN FRANCISCO, CA 94103	1168971 0.22 MI S						X											
20C	ARROW TOOL DIE WORKS 275 8TH SAN FRANCISCO, CA 94103	1169803 0.22 MI S						X											
20D	MORSE TWIST DRILL + MACHINE CO 1180 FOLSOM SAN FRANCISCO, CA 94103	1169908 0.23 MI SE						X											
20E	MALSON PLASTICS 740 CLEMENTINA STREET SAN FRANCISCO, CA 94103	1169056 0.23 MI S						X											
20E	DIAMOND CHEMICAL CO. 720 CLEMENTINA SAN FRANCISCO, CA 94103	1169128 0.24 MI S						X											
20E	HECKER MFG. CO. 758 CLEMENTINA ST. SAN FRANCISCO, CA 94103	1169542 0.24 MI S						X											
20E	TERRY TOOL DIE CO. 762 CLEMENTINA SAN FRANCISCO, CA 94103	1169824 0.24 MI S						X											
20E	ELECTRICAL COMMUNICATIONS CORP 765 CLEMENTINA SAN FRANCISCO, CA 94103	1169969 0.24 MI S						X											
20F	DIAMOND PATENT CO 290 8TH SAN FRANCISCO, CA 94103	1169143 0.24 MI S						X											
20F	TROY LAUNDRY MACHINE CO 1201 FOLSOM SAN FRANCISCO, CA 94103	1169912 0.25 MI S						X											
21A	PARKING LOT 201 TURK SAN FRANCISCO, CA 94102	4044665 0.20 MI N															X		
21A	CHINESE COMMUNITY HOUSING CORP 201 TURK ST SAN FRANCISCO, CA 94102	3781510 0.20 MI N							X										
21A	CHINESE COMMUNITY HOUSING CORP 201 TURK ST SAN FRANCISCO, CA 94102	3080643 0.20 MI N							X										

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
21B	TURK STREET GARAGE 175 TURK SAN FRANCISCO, CA 94102	1232000 0.20 MI N															X		
22A	ROCKFORD SCREW PRODUCTS CO. 780 NATOMA SAN FRANCISCO, CA 94103	1169418 0.20 MI SW						X											
22B	WESTERN MANUFACTURING CO. INC. 149 9TH SAN FRANCISCO, CA 94103	1591768 0.22 MI SW						X											
22C	GATES RUBBER CO (SITE 2) 174 9TH SAN FRANCISCO, CA 94103	1591769 0.23 MI SW						X											
22C	A L BEARINGS SERVICE INC 171 9TH SAN FRANCISCO, CA 94103	1591755 0.23 MI SW						X											
22C	PRECISION BEARINGS INC 173 9TH SAN FRANCISCO, CA 94103	1169863 0.23 MI SW						X											
22D	L BARRETT'S CHEVRON SERVICE 1298 HOWARD SAN FRANCISCO, CA 94103	3197224 0.24 MI S															X		
22D	GRAYBAR ELECTRIC CO INC 190 9TH SAN FRANCISCO, CA 94103	1169664 0.24 MI SW						X											
22D	STANDARD TOOL CO. 1301 HOWARD SAN FRANCISCO, CA 94103	1169822 0.25 MI S						X											
23A	VACANT 1140 FOLSOM SAN FRANCISCO, CA 94103	4824708 0.20 MI SE															X		
23A	MILMAR LITHOGRAPH CO. 1151 FOLSOM SAN FRANCISCO, CA 94103	1169035 0.21 MI SE						X											
23B	CONTINENTAL WATER HEATER CO. 1150 FOLSOM SAN FRANCISCO, CA 94103	1169944 0.21 MI SE						X											
23C	GOULD, L.M. CO. 123 LANGTON SAN FRANCISCO, CA 94103	1169118 0.24 MI SE						X											
24A	ATKINS, E. C. CO 989 HOWARD SAN FRANCISCO, CA 94103	1169692 0.20 MI E						X											
24A	SOUTHWEST LEASING RENTAL 981 HOWARD SAN FRANCISCO, CA 94103	3197220 0.23 MI E															X		
24B	STONE-RYALS ELECTRIC MFG CO. 470 NATOMA SAN FRANCISCO, CA 94103	1169987 0.21 MI E						X											
24C	CLIPPER PRINTING CO 445 NATOMA SAN FRANCISCO, CA 94103	1168899 0.24 MI E						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
24D	DO ALL SAN FRANCISCO CO 952 HOWARD SAN FRANCISCO, CA 94103	1169916 0.25 MI E						X											
25A	PGE 465 STEVENSON ST SAN FRANCISCO, CA 94103	3781499 0.21 MI NE										X							
25A	PGE - STATION T 465 STEVENSON STREET SAN FRANCISCO, CA 94103	3203714 0.21 MI NE						X									X		
25A	PGE GAS PLANT SAN FRANCISCO 502 1K STEVENSON BET 5TH 6TH STS SAN FRANCISCO, CA 94103	327884 0.22 MI NE					X												
25B	ECONOMY PRINTING CO. 443 STEVENSON SAN FRANCISCO, CA 94103	1169030 0.24 MI NE						X											
25C	SF FIRE DEPT 416 JESSIE ST SAN FRANCISCO, CA 94103	935538 0.24 MI NE							X				X						
25C	*SFFD/FIRE STATION #1 416 JESSIE SAN FRANCISCO, CA 94103	1249737 0.24 MI NE															X		
26A	U.S. SERVICE CO 1060 FOLSOM SAN FRANCISCO, CA 94103	1169559 0.22 MI E						X											
26A	CURLE MFG. CO. 1048 FOLSOM SAN FRANCISCO, CA 94103	1169934 0.23 MI E						X											
26B	Q-ROLO SHEET METAL PRODO 1067 FOLSOM SAN FRANCISCO, CA 94103	1169572 0.23 MI SE						X											
26B	RIDDLE, GEO. SONS 1061 FOLSOM SAN FRANCISCO, CA 94103	1169569 0.23 MI E						X											
26B	LIBERTY BRASS BRONZE FOUNDRIES 16 SHERMAN SAN FRANCISCO, CA 94103	1169461 0.24 MI SE						X											
26C	NATIONAL COLOR PRESS 1032 FOLSOM SAN FRANCISCO, CA 94103	1169041 0.24 MI E						X											
27A	241 SIXTH STREET 241 6TH STREET SAN FRANCISCO, CA 94103	3890354 0.22 MI E				X													
28	TELEGRAPH PRESS 71 TURK SAN FRANCISCO, CA 94102	1169021 0.23 MI N						X											
29A	HYDE STREET STATION 168 HYDE SAN FRANCISCO, CA 94102	4030018 0.24 MI NW															X		
30A	*DPW/BBR/CIVIC CTR POWER HOUSE 302 LARKIN SAN FRANCISCO, CA 94102	4032260 0.24 MI W															X		

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID / DISTANCE / DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS		RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
31	RIGHTON, FRANK J. CO. 843 JESSIE SAN FRANCISCO, CA 94103	1169336 0.25 MI SW						X												

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID / DISTANCE / DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS		RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
20	ANDERSON, OLAF 771 CLEMENTINA SAN FRANCISCO, CA 94103	1169741 0.25 MI S						X												
20	PREST-O-PRESS 1216 FOLSOM SAN FRANCISCO, CA 94103	1169033 0.25 MI S						X												
20	MELVIN, JAS M 1218 FOLSOM SAN FRANCISCO, CA 94103	1169039 0.26 MI S						X												
20	HAMILTON, R MFG CO 1219 FOLSOM SAN FRANCISCO, CA 94103	1593423 0.26 MI S						X												
20	PIONEER WATER HEATER CORP 1222 FOLSOM SAN FRANCISCO, CA 94103	1169942 0.26 MI S						X												
20	REYNOLDS METALS CO 1226 FOLSOM SAN FRANCISCO, CA 94103	1169482 0.26 MI S						X												
20	HOBBS BATTERY CO. 1228 FOLSOM SAN FRANCISCO, CA 94103	1169984 0.26 MI S						X												
20	WEISS WELDING WORKS 1237 FOLSOM SAN FRANCISCO, CA 94103	1170132 0.27 MI S						X												
20	WINTHER, RAY CO 1245 FOLSOM SAN FRANCISCO, CA 94103	1169925 0.28 MI S						X												
20	HUBBARD MACHINE CO. 1257 FOLSOM SAN FRANCISCO, CA 94103	1169790 0.29 MI S						X												
20	LANDERS FRARY CLARK 1265 FOLSOM SAN FRANCISCO, CA 94103	1169993 0.29 MI S						X												
20	YORK CORP 1275 FOLSOM SAN FRANCISCO, CA 94103	1593424 0.30 MI S						X												
24	RITTER, F. CO. 948 HOWARD SAN FRANCISCO, CA 94103	1169172 0.25 MI E						X												

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
24	MERCURY PRESS 942 HOWARD SAN FRANCISCO, CA 94103	1168920 0.26 MI E						X											
24	MIPIO METAL PRODUCTS CO 951 HOWARD SAN FRANCISCO, CA 94103	1593981 0.27 MI E						X											
24	CARR WALTER R. CO. 934 HOWARD SAN FRANCISCO, CA 94103	1169810 0.27 MI E						X											
26	WESTERN GEAR WORKS 1035 FOLSOM SAN FRANCISCO, CA 94103	1593421 0.25 MI E						X											
27	RICHMOND BANNER, THE 279 6TH STREET SAN FRANCISCO, CA 94103	1168798 0.25 MI E						X											
27	WESTCRAFT PLASTIC PRODUCTS CO 1004 FOLSOM SAN FRANCISCO, CA 94103	1169304 0.26 MI E						X											
29	HALUK, WM. 433 TURK SAN FRANCISCO, CA 94102	1170025 0.28 MI NW						X											
29	BRADLEY ENTERPRISES 449-51 TURK SAN FRANCISCO, CA 94102	1169806 0.29 MI NW						X											
29	SEABOARD SALES CO 449 TURK SAN FRANCISCO, CA 94102	1169307 0.29 MI NW						X											
30	BOYSEN, WALTER N CO 333 LARKIN SAN FRANCISCO, CA 94102	1169193 0.25 MI W						X											
32	GANNETT, H.W. 30 CLEVELAND SAN FRANCISCO, CA 94103	1169031 0.25 MI SE						X											
32	MCCARTHY PRINTING CO 28 CLEVELAND SAN FRANCISCO, CA 94103	1168924 0.25 MI SE						X											
32	MERCURY PRESS #2 45 CLEVELAND STREET SAN FRANCISCO, CA 94103	1168808 0.26 MI SE						X											
33	GARRETT PRESS 432 NATOMA SAN FRANCISCO, CA 94103	1168987 0.26 MI E						X											
33	SOMERVILLES, THE 430 NATOMA STREET SAN FRANCISCO, CA 94103	1168840 0.27 MI E						X											
33	WELDCO WELDING SERVICE SALES INC 926 HOWARD SAN FRANCISCO, CA 94103	1170134 0.29 MI E						X											
33	TERCO EQUIPMENT CO. 939 HOWARD SAN FRANCISCO, CA 94103	1169796 0.30 MI E						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID / DISTANCE / DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
33	MERLE, I.A. 920 HOWARD SAN FRANCISCO, CA 94103	1170055 0.30 MI E						X											
33	CONLIN ROBERTS 410 NATOMA SAN FRANCISCO, CA 94103	1169601 0.31 MI NE						X											
33	MALL TOOL CO. 925 HOWARD SAN FRANCISCO, CA 94103	1169836 0.31 MI E						X											
33	INTERNATIONAL PRINTING INK CORP. 915 HOWARD SAN FRANCISCO, CA 94103	1169146 0.32 MI E						X											
34	WELLS MFG. CO. 220 9TH SAN FRANCISCO, CA 94103	1591770 0.26 MI S						X											
34	AMERICAN PRINTING AND LITHOGRAPHING 220 9TH STREET SAN FRANCISCO, CA 94103	1595135 0.26 MI S						X											
34	ROCKFORD SCREW PRODUCTS CO-SITE 2 230 9TH SAN FRANCISCO, CA 94103	1591771 0.27 MI S						X											
34	AIRWAY CLEANING FIREPROOFING SYSTE 230 9TH SAN FRANCISCO, CA 94103	1169376 0.27 MI S						X											
34	GIBSON W W 231 9TH SAN FRANCISCO, CA 94103	1169906 0.27 MI S						X											
34	DARCOID CO OF CALIFORNIA 234 9TH SAN FRANCISCO, CA 94103	1591772 0.27 MI S						X											
34	CLOISTER PRESS 237 9TH SAN FRANCISCO, CA 94103	1591773 0.27 MI S						X											
34	KELLER TOOL CO 249 9TH SAN FRANCISCO, CA 94103	1169746 0.28 MI S						X											
34	BUCKLEY CURTIN 252 9TH SAN FRANCISCO, CA 94103	1168970 0.28 MI S						X											
34	WELLS DIE CASTING CO. 43 DORE SAN FRANCISCO, CA 94103	1169460 0.31 MI S						X											
34	ELECTRIC MFG CO INC 34 DORE SAN FRANCISCO, CA 94103	1169272 0.32 MI S						X											
35	FAZEKAS ANTOME 13 GRACE SAN FRANCISCO, CA 94103	1169678 0.27 MI SW						X											
35	SEAL CAR WASH 1400 MISSION ST SAN FRANCISCO, CA 94103	3982640 0.31 MI SW							X										

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
35	BOSTON GEAR WORKS 123 10TH SAN FRANCISCO, CA 94103	1169676 0.31 MI SW						X											
35	WHITNEY VINCENT CO. 130 10TH SAN FRANCISCO, CA 94103	1591315 0.31 MI SW						X											
35	POMONA TILE MFG CO 135 10TH SAN FRANCISCO, CA 94103	1591316 0.31 MI SW						X											
36	EASY WASHING MACHINE CORP. 1355 MARKET SAN FRANCISCO, CA 94103	1594714 0.27 MI SW						X											
36	FOX PLAZA 1390 MARKET ST SAN FRANCISCO, CA 94102	158170 0.29 MI SW							X				X				•		•
37	NATIONAL SERVICES INDUSTRIES 331 8TH SAN FRANCISCO, CA 94103	1591751 0.27 MI SE						X											
38	LIMA-HAMILTON CORP. 1315 HOWARD SAN FRANCISCO, CA 94103	1169856 0.28 MI SW						X											
38	PRATT WHITNEY CO 1331 HOWARD SAN FRANCISCO, CA 94103	1169842 0.29 MI SW						X											
38	ELECTRIC MFG CO DIV OF AMERACE CORP 1345 HOWARD ST SAN FRANCISCO, CA 94103	1169250 0.30 MI SW						X											
39	BLUM'S PRINTING CO. 233 EDDY SAN FRANCISCO, CA 94102	1168982 0.28 MI N						X											
39	DE MELLO PRODUCTS CO. 240 TAYLOR ST. SAN FRANCISCO, CA 94102	1169072 0.31 MI N						X											
39	FAME PRESS 291 ELLIS SAN FRANCISCO, CA 94102	1168988 0.35 MI N						X											
40	FERRY STEEL PRODUCTS EQUIPMENT CO 976 FOLSOM SAN FRANCISCO, CA 94107	1169432 0.29 MI E						X											
40	AMERICAN ALLOY WELDING CO 459 CLEMENTINA SAN FRANCISCO, CA 94103	1170120 0.30 MI E						X											
40	LITHO RESEARCH CO 975 FOLSOM SAN FRANCISCO, CA 94107	1168993 0.30 MI E						X											
40	WILLATS PRINTING COMPANY 950 FOLSOM SAN FRANCISCO, CA 94107	1168962 0.32 MI E						X											
41	CASEY BEARING CO. 406 GOLDEN GATE AVE SAN FRANCISCO, CA 94102	1169875 0.30 MI W						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B								C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
41	CAL-VAN PRODUCTS 440 GOLDEN GATE SAN FRANCISCO, CA 94102	1169809 0.31 MI W						X											
41	DEPT OF JUSTICE 450 GOLDEN GATE AVE SAN FRANCISCO, CA 94102	3776794 0.32 MI W											X						
41	U S GENERAL SERVICES ADMINISTR 450 GOLDEN GATE AVE SAN FRANCISCO, CA 94102	3776795 0.32 MI W											X						
41	US MARSHAL SVC./1-TIME 450 GOLDEN GATE AVE SAN FRANCISCO, CA 94102	3776796 0.32 MI W											X						
41	GSA FEDERAL BUILDING 450 GOLDEN GATE AVE SAN FRANCISCO, CA 94102	182095 0.32 MI W					X						X				•		•
41	PHILLIP BURTON FEDERAL BLDG 450 GOLDEN GATE AVENUE SAN FRANCISCO, CA 94102	149847 0.32 MI W							X				X						
42	ROMO TOOL DIE CO 10 HERON SAN FRANCISCO, CA 94103	1169845 0.30 MI SE						X											
42	SAN FRANCISCO GALVANIZING WORKS 1176 HARRISON SAN FRANCISCO, CA 94103	1593941 0.34 MI SE						X											
42	C M PLATING WORKS 1184 HARRISON SAN FRANCISCO, CA 94103	1593942 0.34 MI SE						X											
42	GROSVENOR BUS LINES 8TH ST HARRISON SAN FRANCISCO, CA	935438 0.36 MI SE							X								•		
42	LARRY BARRETT/COAST TRUCK 1230 HARRISON ST SAN FRANCISCO, CA 94103	1593943 0.36 MI SE							X				X						
42	COAST TRUCK RENTAL 1230 HARRISON ST SAN FRANCISCO, CA 94103	91533 0.36 MI SE											X				•		•
42	MIKES SHELL SVC 1201 HARRISON ST SAN FRANCISCO, CA 94103	274547 0.36 MI SE							X				X				•		•
43	ACE SHEET METAL WORKS 444 CLEMENTINA SAN FRANCISCO, CA 94103	1169617 0.30 MI E						X											
43	LEON HAUSER A. O. 426 TEHAMA SAN FRANCISCO, CA 94103	1169391 0.31 MI E						X											
43	MEYERS SAFETY SWITCH CO 423 TEHAMA SAN FRANCISCO, CA 94103	1169948 0.31 MI E						X											
43	HANSCHEN GODDARD 441 CLEMENTINA SAN FRANCISCO, CA 94103	1170008 0.31 MI E						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
43	KING O L CO 436 CLEMENTINA SAN FRANCISCO, CA 94103	1169240 0.31 MI E						X											
44	EYRLE CO. 384 7TH SAN FRANCISCO, CA 94103	1591725 0.31 MI SE						X											
44	NICHOLAS, F.M. CO. 1123 HARRISON SAN FRANCISCO, CA 94103	1170024 0.32 MI SE						X											
44	CENTRAL SUPPLY CO. 400 7TH SAN FRANCISCO, CA 94103	1591726 0.34 MI SE						X											
45	WASSERMAN PROPERTY 460 EDDY ST SAN FRANCISCO, CA 94109	2745833 0.31 MI NW							X				X						
45	HANDLERY HOTELS 560 ELLIS ST SAN FRANCISCO, CA 94109	1593115 0.37 MI NW							X				X						
46	MANNING, MAXWELL MOORE INC 1295 FOLSOM SAN FRANCISCO, CA 94103	1169797 0.31 MI S						X											
46	WYETH LABORATORIES 1301 FOLSOM SAN FRANCISCO, CA 94103	1169134 0.32 MI S						X											
46	WHITEHALL PHARMACAL CO. 1305 FOLSOM SAN FRANCISCO, CA 94103	1169136 0.33 MI S						X											
46	HARMON COLOR WORKS INC 1313 FOLSOM SAN FRANCISCO, CA 94103	1169184 0.34 MI S						X											
47	LAGUNA HONDA HOSPITAL 101 GROVE ST SAN FRANCISCO, CA 94102	3776879 0.32 MI W							X				X						
47	SAN FRANCISCO DEPT PUBLIC HEALTH 101 GROVE ST RM 419 SAN FRANCISCO, CA 94102	367341 0.32 MI W											X						•
48	SHERWIN-WILLIAMS 1401 MARKET SAN FRANCISCO, CA 94103	1169227 0.32 MI SW						X											
48	BANK OF AMERICA DATA CENTER 1455 MARKET ST SAN FRANCISCO, CA 94103	3199584 0.36 MI SW											X						
48	I B M 1455 MARKET ST SAN FRANCISCO, CA 94103	3777701 0.36 MI SW											X						
48	BANK OF AMERICA DATA CENTER 1455 MARKET ST SAN FRANCISCO, CA 94103	1203937 0.36 MI SW							X								•		
49	ELECTRIC TIME RECORDING REGISTER CO 85 COLUMBIA SQUARE SAN FRANCISCO, CA 94103	1169663 0.32 MI E						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
49	BEARING SPECIALTY CO. 1037 HARRISON SAN FRANCISCO, CA 94103	1169874 0.36 MI E						X											
50	HOLZMUELLER CORPORATION 360 6TH ST. SAN FRANCISCO, CA 94103	1169939 0.33 MI E						X											
50	AD LITHO PRESS, INC. 363 6TH ST. SAN FRANCISCO, CA 94103	1168796 0.34 MI E						X											
50	ROTO METALS 980-82 HARRISON SAN FRANCISCO, CA 94107	1169451 0.38 MI E						X											
50	C H WELDING SERVICE 991 HARRISON SAN FRANCISCO, CA 94107	1169434 0.39 MI E						X											
51	U.S. ASBESTOS, DIV. RAYBESTOS MANHAT 528 LARKIN SAN FRANCISCO, CA 94102	1169332 0.33 MI NW						X											
52	MILES, HARRY CO 372 ELLIS SAN FRANCISCO, CA 94102	1593113 0.34 MI N						X											
52	ACE PRESS 420 ELLIS SAN FRANCISCO, CA 94102	1168983 0.34 MI N						X											
53	NORTHWEST ENGINEERING CO #2 225 10TH SAN FRANCISCO, CA 94103	1169920 0.34 MI SW						X											
53	NORTHWEST MACHINERY CO 255 10TH SAN FRANCISCO, CA 94103	1591318 0.36 MI S						X											
53	PEERLESS WELDING CO. 265 10TH SAN FRANCISCO, CA 94103	1591319 0.37 MI S						X											
54	ATLAS METAL MACHINERY CO 940 FOLSOM SAN FRANCISCO, CA 94107	1170091 0.34 MI E						X											
54	RADO PRINTING PRESS 915 FOLSOM SAN FRANCISCO, CA 94107	1169013 0.37 MI E						X											
55	PACIFIC BELL 150 HAYES ST SAN FRANCISCO, CA 94102	314939 0.35 MI W											X						•
55	CALIFORNIA STATE AUTOMOBILE ASSOCIAT 150 HAYES ST SAN FRANCISCO, CA 94102	935526 0.35 MI W							X				X				•		•
55	WESTERN LIGHTING FIXTURE CO. 70 IVY SAN FRANCISCO, CA 94102	1170011 0.36 MI W						X											
55	SKILSAW INC. 246 VAN NESS SAN FRANCISCO, CA 94102	1169749 0.39 MI W						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
56	HALE BROTHERS ASSOCIATES INC 867 MARKET SAN FRANCISCO, CA 94103	1169064 0.35 MI NE						X											
56	BUCK X-OGRATH CO. 870 MARKET SAN FRANCISCO, CA 94104	1170026 0.40 MI NE						X											
57	GENERAL MACHINERY SUPPLY CO 1346 FOLSOM SAN FRANCISCO, CA 94103	1169756 0.35 MI S						X											
57	OHIO CHEMICAL PACIFIC CO. 1379 FOLSOM SAN FRANCISCO, CA 94103	1593425 0.38 MI S						X											
57	SUN CHEMICAL CO.-SITE 2 1425 FOLSOM SAN FRANCISCO, CA 94103	1169144 0.41 MI S						X											
57	WAYNE PUMP CO 320 10TH SAN FRANCISCO, CA 94103	1591320 0.41 MI S						X											
58	GRIMLEY, FRANK J. 255 SHIPLEY SAN FRANCISCO, CA 94107	1169635 0.36 MI E						X											
58	HY-G CORPORATION 222 CLARA SAN FRANCISCO, CA 94107	1168250 0.40 MI E						X											
58	PITSKER ASSOCIATES 214 CLARA STREET SAN FRANCISCO, CA 94107	1169055 0.41 MI E						X											
59	BREON, GEO. A CO 345 9TH SAN FRANCISCO, CA 94103	1591774 0.36 MI S						X											
59	WINTHROP STEARNS 345-49 9TH SAN FRANCISCO, CA 94103	1169135 0.36 MI S						X											
59	MARWOOD LTD 357 9TH SAN FRANCISCO, CA 94103	1591775 0.36 MI S						X											
59	MONTAGUE CO 360 9TH SAN FRANCISCO, CA 94103	1169921 0.37 MI S						X											
59	C H PAINT AND CHEMICAL CO 367 9TH SAN FRANCISCO, CA 94103	1169108 0.37 MI S						X											
59	MORRIS REFRIGERATION CO 39 SHERIDAN SAN FRANCISCO, CA 94103	1169923 0.40 MI S						X											
59	GLADDING, MCBEAN CO. 1275 HARRISON SAN FRANCISCO, CA 94103	1169335 0.40 MI S						X											
59	ELECTROGRAPHIC CORPORATION 390 9TH STREET SAN FRANCISCO, CA 94103	1168768 0.40 MI S						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
59	AMERICAN WESTERN GRAPHICS 390 9TH ST SAN FRANCISCO, CA 94103	1168791 0.40 MI S						X											
59	PLY-ON COATINGS INC. 55 SHERIDAN SAN FRANCISCO, CA 94103	1169287 0.41 MI S						X											
59	EXCELSIOR BRASS ALUMINUM FOUNDRY 56 SHERIDAN SAN FRANCISCO, CA 94103	1169407 0.41 MI S						X											
59	WESTERN PLASTICS CO -SITE3 1308 HARRISON SAN FRANCISCO, CA 94103	1169295 0.42 MI S						X											
59	BAY BRIDGE RE-TINNING CO(SITE 2) 1310 HARRISON SAN FRANCISCO, CA 94103	1169700 0.42 MI S						X											
59	WESTERN JUNK CO. 407-09 9TH SAN FRANCISCO, CA 94103	1170076 0.42 MI S						X											
60	THOR CORP. 1434 HOWARD SAN FRANCISCO, CA 94103	1169850 0.36 MI SW						X											
60	UNITED CORK CO 1480 HOWARD SAN FRANCISCO, CA 94103	1593984 0.40 MI SW						X											
60	GENERAL GAS LIGHT CO. 225 11TH SAN FRANCISCO, CA 94103	1591332 0.43 MI SW						X											
60	KIMMERLE BROS 226 11TH SAN FRANCISCO, CA 94103	1169835 0.43 MI SW						X											
60	EUROPEAN MOTORS LTD 251 11TH ST SAN FRANCISCO, CA 94103	1148528 0.43 MI SW							X				X						•
60	GOLDEN GATE IRON WORKS INC. 1525-27 HOWARD SAN FRANCISCO, CA 94103	1169448 0.45 MI SW						X											
60	ROYAL MOTOR SALES 1525 HOWARD ST SAN FRANCISCO, CA 94103	361920 0.45 MI SW							X				X				•		•
60	CATHODIC ENGINEERING CO. 1530 HOWARD SAN FRANCISCO, CA 94103	1169205 0.45 MI SW						X											
61	FIELD ERNST ENVELOPE CO. 245 5TH ST SAN FRANCISCO, CA 94103	1168745 0.37 MI E						X											
61	CAMBRIDGE INDUSTRIES INC-SITE 2 361 TEHAMA SAN FRANCISCO, CA 94103	1169312 0.39 MI E						X											
61	BEMIS, C. G. 357 TEHAMA SAN FRANCISCO, CA 94103	1169504 0.39 MI E						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS		RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
61	KEROSTAL PRODUCTS CO. 353 TEHAMA SAN FRANCISCO, CA 94103	1169102 0.40 MI E						X												
61	K-P-F ELECTRIC CO. 855 HOWARD SAN FRANCISCO, CA 94103	1169666 0.41 MI E						X												
61	DULFER, ALEX L. CO. 853 HOWARD SAN FRANCISCO, CA 94103	1168855 0.41 MI E						X												
61	KEYSTONE METAL PLATING WORKS 310 TEHAMA SAN FRANCISCO, CA 94103	1169630 0.43 MI E						X												
62	PHILLIPS, H. H. 552 POLK SAN FRANCISCO, CA 94102	1169309 0.38 MI W						X												
62	INDUSTRIAL TAPE CORP 652 POLK SAN FRANCISCO, CA 94102	1169197 0.41 MI NW						X												
62	KELLY BALL BEARING CO. 651 TURK SAN FRANCISCO, CA 94102	1169865 0.43 MI W						X												
62	FEDERAL MOGUL SERVICE-FIRM 2 655 TURK SAN FRANCISCO, CA 94102	1169864 0.43 MI W						X												
63	STRUCTURAL GLASS CO. 1492 MISSION SAN FRANCISCO, CA 94103	1590930 0.38 MI SW						X												
63	O'KEEFE, W. F. JR. 55 11TH SAN FRANCISCO, CA 94103	1591337 0.39 MI SW						X												
63	ARMSTRONG BROS TOOL CO 67 11TH SAN FRANCISCO, CA 94103	1169802 0.39 MI SW						X												
63	COCA COLA SAN FRANCISCO 1560 MISSION ST SAN FRANCISCO, CA 94103	92302 0.40 MI SW							X				X							•
64	SCHARDER IRON WORKS 1247 HARRISON SAN FRANCISCO, CA 94103	1169520 0.38 MI S						X												
64	SCHRADER IRON WORKS 1247 HARRISON ST SAN FRANCISCO, CA 94103	1593944 0.39 MI S							X				X					•		
65	STRAND CO. 611 LARKIN SAN FRANCISCO, CA 94109	1168944 0.38 MI NW						X												
65	MACKAY PRINTING SERVICE 642 EDDY SAN FRANCISCO, CA 94109	1168950 0.39 MI NW						X												
66	UNITED SHOE MACHINERY CORP. 859 MISSION SAN FRANCISCO, CA 94103	1590889 0.39 MI NE						X												

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B								C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
67	SHELL 300 5TH ST SAN FRANCISCO, CA 94107	935433 0.39 MI E							X				X				•		
67	STANDARD PLATING POLISHING WORKS 896 FOLSOM SAN FRANCISCO, CA 94107	1169622 0.41 MI E						X											
67	TANNER, FRANK T. WELDING 888 FOLSOM SAN FRANCISCO, CA 94107	1170128 0.42 MI E						X											
67	STA CRETE, INC 893 FOLSOM STREET SAN FRANCISCO, CA 94105	1169051 0.42 MI E						X											
67	BOERICK RUNYON CO 880-882 FOLSOM SAN FRANCISCO, CA 94107	1169215 0.43 MI E						X											
67	BETTS SPRING CO 868-876 FOLSOM SAN FRANCISCO, CA 94107	1169399 0.44 MI E						X											
67	SAN FRANCISCO ELEVATOR CO. 860 FOLSOM SAN FRANCISCO, CA 94107	1169881 0.45 MI E						X											
67	BUMPER DEVELOPMENT CORP 863 FOLSOM ST SAN FRANCISCO, CA 94107	4558347 0.45 MI E							X										
68	CITY HALL SAN FRANCISCO 400 VAN NESS SAN FRANCISCO, CA 94111	150110 0.39 MI W											X				•		
68	SHELL 400 VAN NESS AVE S SAN FRANCISCO, CA 94102	1589345 0.39 MI W							X				X				•		
68	VAN NESS/15TH D-5 400 VAN NESS AVE SAN FRANCISCO, CA 94103	1219263 0.39 MI W											X						
68	LEACH, A.L. CO. 465A VAN NESS AVE. SAN FRANCISCO, CA 94102	1169012 0.41 MI W						X											
69	MCCORMACK PAUL A 441 O'FARRELL SAN FRANCISCO, CA 94102	1169369 0.40 MI N						X											
69	BELLEVUE HOTEL 505 GEARY ST SAN FRANCISCO, CA 94102	1593765 0.47 MI N							X				X				•		
70	GENERAL INSULATION RUBBER CORP 960 HARRISON SAN FRANCISCO, CA 94107	1169298 0.41 MI E						X											
70	A K SALVAGE CO. (SITE 1) 967 HARRISON SAN FRANCISCO, CA 94107	1170074 0.41 MI E						X											
70	A K SALVAGE CO. (SITE 2) 21 MORRIS SAN FRANCISCO, CA 94107	1170075 0.42 MI E						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
70	VAN DOORN PROPERTY 938 HARRISON ST SAN FRANCISCO, CA 94107	1593940 0.43 MI E							X				X						
70	PETERSON TRACTOR EQUIPMENT CO 943 HARRISON SAN FRANCISCO, CA 94107	1169816 0.43 MI E						X											
70	BLACK LIGHT CORP. OF NORTHERN CALIF. 925 HARRISON SAN FRANCISCO, CA 94107	1169110 0.45 MI E						X											
70	HENSHAW REFRIGERATOR FIXTURE CO 25 OAK GROVE AV SAN FRANCISCO, CA 94107	1595204 0.46 MI E						X											
71	KERR C R 464 7TH SAN FRANCISCO, CA 94103	1169186 0.41 MI SE						X											
72	BORDEN PRINTING CO. 329 MINNA ST SAN FRANCISCO, CA 94103	1168773 0.42 MI NE						X											
72	GUARANTY PRINTING LITHOGRAPH CO 809 MISSION STREET SAN FRANCISCO, CA 94103	1594792 0.45 MI NE						X											
72	CRANE PRINTING CO 313 MINNA SAN FRANCISCO, CA 94103	1168893 0.46 MI NE						X											
72	SAPIR PRESS, THE 311 MINNA SAN FRANCISCO, CA 94103	1168935 0.46 MI NE						X											
72	JACKSON, H. E. CO. 309 MINNA SAN FRANCISCO, CA 94103	1168992 0.47 MI NE						X											
73	CALIFORNIA HIGHWAY PATROL 455 8TH ST SAN FRANCISCO, CA 94103	935439 0.42 MI SE							X				X				•		
73	MACLEAN NEIL A CO INC 470 8TH SAN FRANCISCO, CA 94103	1591752 0.43 MI SE						X											
73	ATLAS SAW GRINDING WORKS 1012 BRYANT SAN FRANCISCO, CA 94103	1170137 0.47 MI SE						X											
73	ASSOCIATED VALVE ENGINEERING CO 1045 BRYANT SAN FRANCISCO, CA 94103	1169695 0.47 MI SE						X											
74	QUALITY CRAFT LEATHER CO. 308 O'FARRELL SAN FRANCISCO, CA 94102	1169327 0.43 MI N						X											
74	AMTAD CONSTRUCTION SITE MASON ST O'FARRELL SAN FRANCISCO, CA	935557 0.43 MI N							X				X						
75	HERBST BROS 1525 MISSION SAN FRANCISCO, CA 94103	1590933 0.43 MI SW						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B								C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
75	CARDCO CORP. 1535 MISSION ST. SAN FRANCISCO, CA 94103	1594801 0.44 MI SW						X											
75	BEARING ENGINEERING CO. 1547 MISSION SAN FRANCISCO, CA 94103	1590936 0.45 MI SW						X											
76	SOLOMON, JOS. 724 LARKIN SAN FRANCISCO, CA 94109	1170042 0.43 MI NW						X											
77	A-C METAL FINISHERS 369 5TH SAN FRANCISCO, CA 94107	1169702 0.44 MI E						X											
77	CONN, E.E. SAW TOOL WORKS 371 5TH SAN FRANCISCO, CA 94107	1591664 0.45 MI E						X											
77	KENNAMETAL INC 378 5TH SAN FRANCISCO, CA 94107	1591665 0.45 MI E						X											
77	GOODALL RUBBER CO. (SITE 1) 398 5TH SAN FRANCISCO, CA 94107	1591666 0.46 MI E						X											
77	USA AUTO SALES 400 5TH ST SAN FRANCISCO, CA 94107	3775328 0.47 MI E											X						
77	ARCO 400 5TH ST SAN FRANCISCO, CA 94118	1177207 0.47 MI E							X				X						
78	SUPER-7 595 VAN NESS AVE S SAN FRANCISCO, CA 94110	935597 0.44 MI W							X				X						
78	SEGALL PRINTING CO. 627 VAN NESS SAN FRANCISCO, CA 94102	1168932 0.45 MI W						X											
78	THOMPSON PRODUCTS INC 636 VAN NESS SAN FRANCISCO, CA 94102	1170035 0.45 MI W						X											
78	SNAP ON TOOLS CORP. 635 GOLDEN GATE AV SAN FRANCISCO, CA 94102	1169819 0.47 MI W						X											
78	YUKON MFG. CO. 646 GOLDEN GATE AVE. SAN FRANCISCO, CA 94102	1169555 0.48 MI W						X											
78	MORGAN SPRING CO. 660 GOLDEN GATE AVE. SAN FRANCISCO, CA 94102	1169479 0.49 MI W						X											
79	COMMERCIAL MACHINERY CO 350 10TH SAN FRANCISCO, CA 94103	1169905 0.44 MI S						X											
79	COSTA, CARLO 47 JUNIPER SAN FRANCISCO, CA 94103	1169507 0.45 MI S						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B										C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
79	KENNEDY VALVE MANUFACTURING CO 350 10TH SAN FRANCISCO, CA 94103	3890307 0.45 MI S						X											
79	FAIX, JOHN 1356 HARRISON SAN FRANCISCO, CA 94103	1169744 0.45 MI S						X											
79	GOLDEN WEST PLATING WORKS LTD 60 JUNIPER SAN FRANCISCO, CA 94103	1169699 0.45 MI S						X											
79	WIRE ROPE CORPORATION 370 10TH SAN FRANCISCO, CA 94103	4285668 0.46 MI S						X											
79	G L BODY SHOP 1375 HARRISON SAN FRANCISCO, CA 94103	1170046 0.46 MI S						X											
79	HITE, J. W. 1420 HARRISON SAN FRANCISCO, CA 94103	1169698 0.48 MI S						X											
79	ARISTON METAL PRODUCTS 1415 HARRISON SAN FRANCISCO, CA 94103	1169503 0.48 MI S						X											
80	AUTOMOTIVE ENGINEERING 1465 FOLSOM STREET SAN FRANCISCO, CA 94103	33916 0.44 MI S						X											
80	STUART RADIATOR CORE CO SITE 2 1475 FOLSOM SAN FRANCISCO, CA 94103	1170043 0.45 MI S						X											
80	INERTOL CO 1489 FOLSOM SAN FRANCISCO, CA 94103	1169121 0.46 MI S						X											
80	ELECTRICAL SPECIALTY CO 316 11TH SAN FRANCISCO, CA 94103	1591333 0.48 MI S						X											
80	INDUSTRIAL ORNAMENTAL IRON BRONZE 1526-28 FOLSOM SAN FRANCISCO, CA 94103	1169449 0.49 MI S						X											
80	PFISTER, WM. 1528 FOLSOM SAN FRANCISCO, CA 94103	1169517 0.49 MI S						X											
80	PANELYTE DIV OF ST REGIS SALES CORP 316 11TH SAN FRANCISCO, CA 94103	4285672 0.49 MI S						X											
81	RHODES D H CO 434 9TH SAN FRANCISCO, CA 94103	1169084 0.45 MI S						X											
81	BRENNAN-HAMILTON CO 44 MCLEA CT. SAN FRANCISCO, CA 94103	1169807 0.46 MI S						X											
81	WAGNER ELECTRIC CORP. 457 9TH SAN FRANCISCO, CA 94103	1591776 0.47 MI S						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS		RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
81	SCHMIDT'S AUTOMOTIVE CO. 1060 BRYANT ST SAN FRANCISCO, CA 94103	935464 0.49 MI SE							X									•		
81	SCHMIDTS AUTOMOTIVE 1080 BRYANT ST SAN FRANCISCO, CA 94103	3775852 0.49 MI SE											X							
81	BOWSER INC 468 9TH SAN FRANCISCO, CA 94103	1591777 0.50 MI S						X												
81	FORTRIEDE, CAROL C. CO. 1070 BRYANT SAN FRANCISCO, CA 94103	1169831 0.50 MI SE						X												
81	BINNS MACHINE + TOOL WORKS 1072 BRYANT SAN FRANCISCO, CA 94103	1169686 0.50 MI SE						X												
81	MUELLER BRASS CO 475 9TH SAN FRANCISCO, CA 94103	1169387 0.50 MI S						X												
82	BOAS INTERNATIONAL MOTORS 10 S VANNESS AVE SAN FRANCISCO, CA 94103	51800 0.45 MI SW							X				X					•		•
83	WEST DISINFECTING CO 921 BRYANT SAN FRANCISCO, CA 94103	1169152 0.45 MI SE						X												
83	O'HAIR, P.E. + CO. 945 BRYANT SAN FRANCISCO, CA 94103	1169909 0.45 MI SE						X												
84	HALL OF JUSTICE GASOLINE STN. 950 BRYANT ST SAN FRANCISCO, CA 94103	935465 0.45 MI SE							X											
84	CCSF PURCHASING CENTRAL SHOPS 950 BRYANT STREET SAN FRANCISCO, CA 94103	74331 0.45 MI SE											X					•		•
84	HALL OF JUSTICE SERVICE STATIO 950 BRYANT ST SAN FRANCISCO, CA	3775851 0.45 MI SE											X							
84	SAN FRANCISCO GEN HOSP 950 BRYANT ST SAN FRANCISCO, CA 94103	1262260 0.45 MI SE											X							
84	SKF INDUSTRIES INC. 979 BRYANT SAN FRANCISCO, CA 94103	1169867 0.46 MI SE						X												
84	D ZELINSKY SONS INC 975 BRYANT STREET SAN FRANCISCO, CA 94103	131022 0.46 MI SE							X				X					•		•
85	LONGSHORE, I HOLCOMB 150 POWELL SAN FRANCISCO, CA 94102	4286562 0.45 MI NE						X												
85	MYLANS PHARMACEUTICALS 220 O'FARRELL SAN FRANCISCO, CA 94102	1169139 0.47 MI NE						X												

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
86	JOY MANUFACTURING CO. 155 FELL SAN FRANCISCO, CA 94102	1169892 0.46 MI W						X											
86	BURRIDGE CO., THE 165 FELL SAN FRANCISCO, CA 94102	1169547 0.47 MI W						X											
87	SEALED POWER CORP 552 MCALLISTER SAN FRANCISCO, CA 94102	1169931 0.46 MI W						X											
87	SUPERB SPRING CO. #2 250 REDWOOD SAN FRANCISCO, CA 94102	1169478 0.47 MI W						X											
88	CHRIS REFRIGERATORS 173 SHIPLEY SAN FRANCISCO, CA 94107	1169959 0.46 MI E						X											
88	JONES, AL L. CO 186 CLARA SAN FRANCISCO, CA 94107	1168851 0.48 MI E						X											
89	GILMORE AIR CONDITIONING SERVICE 511 7TH SAN FRANCISCO, CA 94103	1591727 0.47 MI SE						X											
89	CHICAGO PNEUMATIC TOOL CO 855 BRYANT SAN FRANCISCO, CA 94133	1169811 0.47 MI SE						X											
89	RIHCON IRON BRASS FOUNDRY 528 SHERMAN SAN FRANCISCO, CA 94103	1169502 0.47 MI SE						X											
89	MACO SHEET METAL PRODUCTS CO 521 7TH SAN FRANCISCO, CA 94103	1591728 0.48 MI SE						X											
89	GULRICH SHEET METAL BLOW PIPE WHS 24 GILBERT SAN FRANCISCO, CA 94103	1169591 0.48 MI SE						X											
89	PRICE BUILDING SPECIALTIES CO 35 GILBERT SAN FRANCISCO, CA 94103	1593626 0.49 MI SE						X											
90	DE LAURIER, WM. A. 847 HOWARD SAN FRANCISCO, CA 94103	1168883 0.47 MI E						X											
90	LEWIS LITHOGRAPH INC 820 HOWARD STREET SAN FRANCISCO, CA 94103	1168806 0.47 MI NE						X											
90	DETTNER'S PRINTING HOUSE INC 835 HOWARD SAN FRANCISCO, CA 94103	1168890 0.48 MI NE						X											
90	FLORALART PRODUCTS 833 HOWARD SAN FRANCISCO, CA 94103	1169552 0.48 MI NE						X											
91	VALVE EXCHANGE 819 BRYANT SAN FRANCISCO, CA 94133	1169814 0.47 MI E						X											

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID / DISTANCE / DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS		RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
91	LE PAGES INC 489 6TH SAN FRANCISCO, CA 94103	1169148 0.48 MI E						X												
91	BEEDLE PAINT PRODUCTS COMPANY 501 6TH SAN FRANCISCO, CA 94103	1591699 0.49 MI E						X												
92	TRIANGLE LETHO PLATE GRAINING CO 120 WILLOW SAN FRANCISCO, CA 94109	1169620 0.47 MI NW						X												
93	CYCLOPS IRON WORKS 837-847 FOLSOM SAN FRANCISCO, CA 94107	1169857 0.48 MI E						X												
93	BENJAMIN ELECTRIC MFG CO SITE 2 829 FOLSOM SAN FRANCISCO, CA 94107	1169976 0.49 MI E						X												
94	UNKNOWN 790 VAN NESS AVE SAN FRANCISCO, CA 94102	1589346 0.50 MI W							X											
94	790 VAN NESS AVE SAN FRANCISCO, CA 94102	3779266 0.50 MI W											X							

MAP ID	SITES IN THE SURROUNDING AREA (within 1/2 - 1 mile)	VISTA ID / DISTANCE / DIRECTION	A				B									C			D	
			NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS		RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
No Records Found																				

UNMAPPED SITES	VISTA ID	A				B								C			D	
		NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
HERST, S.B. 576 FOLSOM SAN FRANCISCO, CA 94105	1169665						X											
WUELKER INFRA-RED LIGHTING CO. 967 HOWARD SAN FRANCISCO, CA 94103	1169667						X											
DAHL BECK ELECTRIC COMPANY 580 HOWARD ST SAN FRANCISCO, CA 94105	1247748							X				X				X		
ATLAS ELEVATOR CO 417 6TH SAN FRANCISCO, CA 94103	1169668						X											
MCGREGOR SWIRE AIRFREIGHT SERVICE 111 KIMBAL AVE SAN FRANCISCO, CA 94109	3078916						X											
CALIFORNIA SCREW CO. 74 CLEMENTINA SAN FRANCISCO, CA 94105	1169416						X											
MARION POWER SHOVEL CO 571 HOWARD SAN FRANCISCO, CA 94105	1169929						X											
JOHNSON BRONZE CO 1559 HOWARD SAN FRANCISCO, CA 94103	935440						X	X										
FOTOMAT CORP SF835 521 MISSION ST SAN FRANCISCO, CA 94103	3199763																	X
GENEAL SERVICES ADMINISTRATION REGI 1064 1068 MISSION ST SAN FRANCISCO, CA	3863827										X							
BAY CHEMICAL LABORATORIES 50 TEHAMA SAN FRANCISCO, CA 94105	1169175						X											
SF PORT FERRY BLDG SAN FRANCISCO, CA 94102	3774744											X						
MARRELL STUDIOS 955 NATOMA SAN FRANCISCO, CA 94103	1169689						X											
GORDON PRESS 531 HOWARD SAN FRANCISCO, CA 94105	1168922						X											
WEST COAST SAW KNIFE CO 10 TEHAMA SAN FRANCISCO, CA 94105	1169690						X											
PGE-BEACH POWELL JEFFERSON MASON BEACH POWELL JEFFERSON MASON SAN FRANCISCO, CA	3781405										X							
333 MARKET STREET #200 333 MARKET SAN FRANCISCO, CA 94105	1257511															X		

UNMAPPED SITES	VISTA ID	A				B								C			D	
		NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
KORSTEN OSCAR COPPER WORKS 51-57 TEHAMA SAN FRANCISCO, CA 94105	1169453						X											
FEELY MFG CO 725-29 HARRISON SAN FRANCISCO, CA 94107	1169198						X											
ERICKSON PRINTING CO 330 MARKET SAN FRANCISCO, CA 94105	1168943						X											
ELECTROCON CO. 677 HARRISON SAN FRANCISCO, CA 94107	1169968						X											
NATIONAL ANILINE-DIV. OF ALLIED CHEM 517 HOWARD SAN FRANCISCO, CA 94105	1169201						X											
IDEAL VENTILATING SHEET METAL WORK 960 NATOMA SAN FRANCISCO, CA 94103	1169715						X											
STRECKER, MRS. E. M. 519 MISSION SAN FRANCISCO, CA 94105	1590836						X											
GENERAL SERVICES DEPARTMENT 350 MCALLISTER SAN FRANCISCO, CA 94102	1257526															X		
GENERAL DYESTUFF CORP 37 CLEMENTINA SAN FRANCISCO, CA 94105	1169206						X											
QUALITY OFFICE MACHINES 531 MISSION SAN FRANCISCO, CA 94105	1590839						X											
LEISENRING PRINTING CO. 545 MISSION SAN FRANCISCO, CA 94105	1590842						X											
MONTAYNE, P. 565 MISSION SAN FRANCISCO, CA 94105	1590844						X											
SEIPEL ORNAMENTAL IRON WORKS 959 NATOMA SAN FRANCISCO, CA 94103	1169469						X											
BRIZARD YOUNG 72 TEHAMA SAN FRANCISCO, CA 94105	1169727						X											
SOUTHERN PACIFIC RIGHT OF WAY FRANCES CLEVELAND SANTA ROSA, CA	1294403							X				X						
AMERICAN BITUMULS ASPHALT CO 320 MARKET STREET SAN FRANCISCO, CA 94111	1169231						X											
SAN FRANCISCO BRASS FOUNDRY INC 25-37 TEHAMA SAN FRANCISCO, CA 94105	1169487						X											

UNMAPPED SITES	VISTA ID	A				B								C			D	
		NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
US FEDERAL RESERVE BANK 101 MARKET ST SAN FRANCISCO, CA 94105	150096																	X
SF PORT-PIER #46 EMBARCADERO 1ST BRANNON SAN FRANCISCO, CA 94105	3775825											X						
ALERT PRESS 258 MARKET SAN FRANCISCO, CA 94111	1168977						X											
VON HACHT, KARL 90 TEHAMA SAN FRANCISCO, CA 94105	1169489						X											
CHEVRON 102 FRANKLIN ST SAN FRANCISCO, CA 94102	935506							X				X				•		
NORDBERG MFG. 674 HARRISON SAN FRANCISCO, CA 94107	1593938						X											
TRI-STATE SUPPLY CORP. 554 BRYANT SAN FRANCISCO, CA 94107	1170004						X											
ASSOCIATED LIGHTING SERVICE 488 BRYANT SAN FRANCISCO, CA 94107	1170005						X											
KENDALL MILLS 572 HOWARD SAN FRANCISCO, CA 94105	1168726						X											
COLMAN, M.G. CO. 317 MARKET SAN FRANCISCO, CA 94105	1168727						X											
LAZAIR AUTO CENTER 301 6TH SAN FRANCISCO, CA 94107	1252443															X		
C M PLATING WORKS 598 SIXTH ST SAN FRANCISCO, CA 94103	89438		X	X		X								X				•
HUNTERS POINT ANNEX OU5 PA 19,24, 32,36,39,40-50 SAN FRANCISCO, CA 94107	3767906							X										
ILLUMINANT PRODUCTS INC. 926 NATOMA SAN FRANCISCO, CA 94103	1170018						X											
LE BARON 760 HARRISON ST SAN FRANCISCO, CA 94107	935524							X				X						
VACANT LOT 555 9TH SAN FRANCISCO, CA 94103	4823909															X		
ELECTRICAL SHOP 528 FOLSOM SAN FRANCISCO, CA 94105	1170023						X					X						

UNMAPPED SITES	VISTA ID	A				B								C			D	
		NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
FEDERAL RESERVE 101 MARKET SAN FRANCISCO, CA 94105	4034412															X		
COOK, H.N. BELTING CO 401 HOWARD SAN FRANCISCO, CA 94105	1169262						X											
RENSTROM GEAR MACHINE WORKS 514 BRYANT ST. SAN FRANCISCO, CA 94107	1169774						X											
PHOTOWORKS 20774 MARKET ST SAN FRANCISCO, CA 94114	3199599																	X
GENERAL TOOL DIE STAMPING WORKS 1050 NATOMA SAN FRANCISCO, CA 94103	1169781						X											
MOKU PAHU ITB NUMBER CG000290 333 MARKET ST SAN FRANCISCO, CA 94105	4866680																	X
HILLS PLAZA FOLSOM STEWART SAN FRANCISCO, CA	3781500										X							
MARBETT CORPORTION PROPERTY 440 8TH STREET SAN FRANCISCO, CA 94107	4983936							X										
SF PORT HYDE ST SAN FRANCISCO, CA	1593990							X				X						
METROPOLITAN PARKING CORP.#93 530 TAYLOR SAN FRANCISCO, CA 94102	4044936															X		
UNOCAL 12TH ST MISSION SAN FRANCISCO, CA	1590154							X										
HYATT HOTEL BAY TAYLOR/FISHERMAN'S WHARF SAN FRANCISCO, CA	3781514										X							
FORD GRAPHICS 981 MISSION ST SAN FRANCISCO, CA 94103	4866699																	X
CARLISLE DIVISION OF LITTON INDUSTRI 645 HARRISON ST. SAN FRANCISCO, CA 94107	1168780						X											
BMW OF SAN FRANCISCO 1675 HOWARD ST SAN FRANCISCO, CA 94103	4866445																	X
NEW UNION QUALITY CLEANERS 2070 MISSION ST SAN FRANCISCO, CA 94110	4866701																	X
CRAFTSMAN PRESS 543 HOWARD ST. SAN FRANCISCO, CA 94105	1168782						X											

UNMAPPED SITES	VISTA ID	A				B								C			D	
		NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
GEORGE PRINTING CO 270 6TH SAN FRANCISCO, CA 94103	1169038						X											
MOROSI PRINTING CO 440 HOWARD SAN FRANCISCO, CA 94105	1169040						X											
CIBA CO. INC 231 6TH SAN FRANCISCO, CA 94103	1591697						X											
METALS CONSTRUCTION CO 320 6TH SAN FRANCISCO, CA 94103	1591698						X											
BLUE PRINT SVC 92 NATOMA ST SAN FRANCISCO, CA 94105	3200146																	X
UNION OFFSET INC. 340 6TH SAN FRANCISCO, CA 94103	4017299															X		
SOUTH OF MARKET SHELL 377 6TH SAN FRANCISCO, CA 94103	4017300															X		
ATLAS LOOSE LEAF INDEX CO. 515 HOWARD ST SAN FRANCISCO, CA 94105	1168788						X											
WESTERN NEWSPAPER UNION - SITE 2 500 HOWARD SAN FRANCISCO, CA 94105	1169047						X											
WESTERN TIRE SALES 528 FOLSOM SAN FRANCISCO, CA 94105	3776671											X						
CHEVRON OAKLAND INTL AIRPORT OAKLAND, CA 94102	3777953											X						
HERTZ SERVICE CENTER OAKLAND INTL AIRPORT OAKLAND, CA 94102	3777954											X						
ETS-HOKIN CORP. 551 MISSION ST. SAN FRANCISCO, CA 94105	1594787						X											
UNIVERSITY OF SAN FRANCISCO 2445 GOLDEN GATE AVE SAN FRANCISCO, CA 94118	1600931													X				•
PACIFIC GAS AND ELECTRIC COMPA OAKLAND INTL AIRPORT OAKLAND, CA 94102	3777955											X						
WESTAMERICA PUBLICATIONS INC 609 MISSION STREET SAN FRANCISCO, CA 94105	1594788						X											
PSA STORAGE TANKS: NUMBERS 20A OAKLAND INTL AIRPORT OAKLAND, CA 94102	3777956											X						

UNMAPPED SITES	VISTA ID	A				B								C			D	
		NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
WATSON BROOKS CO 660 MISSION STREET SAN FRANCISCO, CA 94105	1594789						X											
TRANS AMERICAN AIRLINES OAKLAND INTL AIRPORT OAKLAND, CA 94102	3777957											X						
FITZSIMMONS, J.J. 47 FRANKLIN SAN FRANCISCO, CA 94102	1169317						X											
COOPER J Z CO 321 6TH SAN FRANCISCO, CA 94103	1170086						X											
PAUL SHEET METAL WORKS 77 NATOMA SAN FRANCISCO, CA 94105	1169575						X											
*POLICE/RICHMOND STATION 461 6TH SAN FRANCISCO, CA 94118	1229739															X		
RALPHS-PUGH CO. INC. 532 HOWARD SAN FRANCISCO, CA 94105	1169326						X											
MUNI KIRKLAND BUS YARD POWELL - BEACH - STOCKTON - N.POINT SAN FRANCISCO, CA	1595575										X							
WOBBER BROS 444 JESSIE STREET SAN FRANCISCO, CA 94103	1168824						X											
BAILEY CHARLES M FOUNDRY CO 1500 7TH SAN FRANCISCO, CA 94107	3890365						X											
DOYLE SHEET METAL WORKS 566 FOLSOM SAN FRANCISCO, CA 94105	1169597						X											
GENERAL FIREPROOFING CO. 1025 NATOMA SAN FRANCISCO, CA 94103	1169344						X											
SOUTHERN PACIFIC TRANSPORTATION CO. 1 MARKET PLAZA SAN FRANCISCO, CA 94105	4937157							X										
PGE GAS PLANT SAN FRANCISCO 502 1A @MARKET JANE(JANE ST GONE) SAN FRANCISCO, CA 94105	327878					X												
UNOCAL 1400 VAN NESS AVE S SAN FRANCISCO, CA 94110	1588938							X				X						
ART TILE MANTEL CO. 221 OAK SAN FRANCISCO, CA 94102	1169354						X											
*SFFD/FIRE STATION #5 1301 TURK SAN FRANCISCO, CA 94115	1249739															X		

UNMAPPED SITES	VISTA ID	A				B								C			D	
		NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
BUSINESS AIRCRAFT DISTRIBUTORS OAKLAND INTL AIRPORT OAKLAND, CA 94102	3790795											X						
MOBIL OIL MARINE STATION FOOT OF HYDE ST SAN FRANCISCO, CA 94109	279500																	X
GOLDEN GATE AVIATION OAKLAND INTL AIRPORT OAKLAND, CA 94102	3790796											X						
MORTON WELDING CO. 322 6TH SAN FRANCISCO, CA 94103	1170124						X											
PACIFIC AIRMOTIVE OAKLAND INTL AIRPORT OAKLAND, CA 94102	3790797											X						
*SFFD/FIRE STATION #7 2300 FOLSOM SAN FRANCISCO, CA 94110	1249742															X		
SAN FRANCISCO WELDING FABRICATING 528 FOLSOM SAN FRANCISCO, CA 94105	1170127						X					X						
600 HARRISON STREET 600 HARRISON ST SAN FRANCISCO, CA 94107	3781332							X										
WILLIAMS WELDING SERVICE 47 SHIPLEY SAN FRANCISCO, CA 94107	1170133						X											
ARCO CO. OF CALIF., LTD. 546 BRYANT SAN FRANCISCO, CA 94107	1169111						X											
*SFFD/HEADQUARTER MGMT SERVICE 260 GOLDEN GATE SAN FRANCISCO, CA 94102	4027867															X		
RITCHIE SISKO AUTO PARKS 521 MISSION SAN FRANCISCO, CA 94105	4013023															X		
UNION SEABOARD 526 MISSION SAN FRANCISCO, CA 94105	4013025															X		
DAVID C. DAVIS CO. 105 MARKET ST SAN FRANCISCO, CA 94105	1169385						X											
GRAPHIC ARTS ENGRAVING CO 35 NATOMA ST SAN FRANCISCO, CA 94105	3767786																	X
ALLIS-CHALMERS MFG CO. 650 HARRISON SAN FRANCISCO, CA 94107	1169899						X											
AUSTIN-WESTERN CO 33 CLEMENTINA SAN FRANCISCO, CA 94105	1169900						X											

UNMAPPED SITES	VISTA ID	A				B								C			D	
		NPL	CORRACTS	TSD	SPL	CERCLIS	SCL	LUST	SWLF	DEED RSTR	NORTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
WEBER, RICHARD M. 772 HARRISON SAN FRANCISCO, CA 94107	1168877						X											
CALIFORNIA PLATE GRAINING CO. 562 HOWARD SAN FRANCISCO, CA 94105	1168878						X											
METROPOLITAN PARKING CORP.#63 572 MISSION SAN FRANCISCO, CA 94105	4013042															X		
THE BRASS WORKS 617 7TH SAN FRANCISCO, CA 94103	4017399															X		
PACIFIC MILL MINE SUPPLY CO 526 FOLSOM SAN FRANCISCO, CA 94105	1169911						X											
KINGSWELL BROS LTD 457 MINNA SAN FRANCISCO, CA 94103	1169405						X											

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APPENDIX E
HISTORIC RESOURCES REPORT

Significant Historic Resources

The criteria for determining eligibility for listing on the National Register of Historic Places (NRHP) have been developed by the National Park Service. Resources may qualify for NRHP listing if they:

A. are associated with events that have made a significant contribution to the broad patterns of our history; or

B. are associated with the lives of persons significant in our past; or

C. embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. have yielded, or may be likely to yield, information important in prehistory or history.

According to the National Register of Historic Places guidelines, the "essential physical features" of a property must be present for it to convey its significance. Further, in order to qualify for the NRHP, a resource must retain its integrity, or "the ability of a property to convey its significance." The seven aspects of integrity are:

1. Location (the place where the historic property was constructed or the place where the historic event occurred);

2. Design (the combination of elements that create the form, plan, space, structure, and style of a property);

3. Setting (the physical environment of a historic property);

4. Materials (the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property);

5. Workmanship (the physical evidence of the crafts of a particular culture or people during any given period of history or prehistory);

6. Feeling (a property's expression of the aesthetic or historic sense of a particular period of time); and,

7. Association (the direct link between an important historic event or person and a historic property).

The relevant aspects of integrity depend upon the National Register criteria applied to a property. For example, a property nominated under Criterion A (events), would be likely to convey its significance

primarily through integrity of location, setting and association. A property nominated solely under Criterion C (design) would usually rely primarily upon integrity of design, materials and workmanship.

Ratings are also included for properties evaluated in the Heritage Survey conducted by the Foundation for San Francisco's Heritage (a detailed explanation of the property rating system used for this survey can be found in this Appendix), when known and for categories listed in the Downtown Plan in the San Francisco Planning Code (Article 11, Appendix D). Where applicable and known, buildings referenced will include their category designations as follows: [I-IV] refers to category designations in the Downtown Plan and {A-D} refer to San Francisco Heritage Rating. If the building is not rated, it shall be designated with an [X], if the rating is not certain, it shall be designated with a [?].

A. Tenth and Market Alternative

No properties located on the project site or within the APE for the Tenth and Market Alternative Site are presently listed on the National Register of Historic Places. However, two properties adjacent to the project site and within the APE appear to be eligible for listing:

- 1301-75 Market Street. The Western Furniture Mart is a substantial Moderne-style building constructed in 1937, occupying the entire Market Street frontage between Ninth and Tenth streets. It appears to be eligible for listing under Criterion A (events) for its associations with the City's economic development. It also appears to be eligible for listing under Criteria C (design) as a very good and relatively scarce example of this style and period (produced by the Capitol Company Architects), particularly for the use of terra cotta tiles. [I] {B}

- 1449-53 Mission Street. The five-story Gantner and Mattern Milling Company building (presently, Heald Business College) was constructed in 1913. It appears to be eligible for listing under Criterion A (events) as one of the largest and best examples of the type of industrial development that characterized the south of Market Street area, particularly after 1907. It also appears to be eligible for listing under Criteria C (design) as a very good example of the later variations of the Beaux Arts style frequently employed after the earthquake and fire (designed by the notable local architect George W. Kelham). [X] {B}

Buildings located adjacent to the project site and within the APE for the Tenth and Market Alternative Site which appear to be ineligible for individual listing on the NRHP, and not contributing to the formation of a district:

- 1400-20 Market Street (Grand Central Hotel, 1907; altered in 1939) [X] {X}
- 1440-44 Market Street (McGovern Building, 1913) [X] {X}
- 18 Tenth Street (circa 1940) [X] {X}
- 24-30, 34-70 Tenth Street (1924-35) [X] {X}

Buildings located adjacent to the project site and within the APE for the Tenth and Market Alternative Site which appear to be ineligible for the NRHP due to age or alterations:

- 1390 Market Street (Fox Plaza, 1967) [X] {X}
- 1401-29 Market Street (1926, altered) [X] {X}
- 1435 Market Street (1924, altered) [X] {X}
- 1446 Market Street (1916, altered) [X] {X}
- 1455 Market Street (Bank of America Computer Center, circa 1974) [X] {X}
- 1484-98 Market Street (circa 1960) [X] {X}
- 16 Tenth Street (circa 1955) [X] {X}
- 20-22 Tenth Street (circa 1955) [X] {X}

B. Seventh and Mission Alternative

Properties located within the APE for the Seventh and Mission Alternative Site and presently listed on the National Register of Historic Places include:

- 95 Seventh Street. Construction of the U.S. Post Office and Court of Appeals building began in 1897 and was completed in 1905 under the supervision of architect James Knox Taylor. This building represents a complete realization of the pre-earthquake Beaux Art style. Listed on the NRHP in 1971, and appears to remain eligible. [I] {A}

- 982-1112; 973-1105 Market Street. The Market Street Theater and Loft District is a thematically linked grouping of buildings located on the north and south sides of Market Street. These buildings are fine, representative examples of the period of commercial development occurring from 1905 through the mid-1920s. The district was listed on the NRHP in 1986, and appears to remain eligible (No significant changes since determined eligible). Two buildings within the APE are listed as contributors to the district:

  - 1095 Market Street. The Grant Building, designed in the Renaissance style by Newton Tharp, is an eight-story building constructed in 1905 and repaired in 1906. Despite some alterations to the ground floor and removal of the cornice, it serves as an important anchor for the district. [I] {}

  - 6-26 Seventh Street. The five-story Oddfellows Hall was constructed in 1909 from a Renaissance design produced by architect GA Dodge. Together with the Grant Building, it serves as an important visual anchor for the western edge of the district. [I] {}

The following properties within the APE for the Seventh and Mission Site establish the visual context for the Post Office and Court of Appeals Building, and are representative of developmental themes of commerce, industry, tourism and civic life presented during the period 1905-1930. They appear (in the opinion of SBRA) to contribute to the formation of a NRHP district anchored by the Post Office:

- 1077 Mission Street (circa 1920) [X] {X}

- 1083-85 Mission Street (1906) [III] {X}
- 1087-89 Mission Street (1921) [III] {X}

- 1119-21 Mission Street (1907) [X] {C}

- 1125 Mission Street (Hess Garage, 1927) [X] {? illegible}

- 1131 Mission Street (Confectioner's Exchange, 1923) [X] {C}

- 1139 Mission Street (1921) [X] {X}

- 1145-49 Mission Street (1910) [X] {X}

- 1151-53 Mission Street (1910) [X] {C}

- 1155 Mission Street (1914) [X] {C}

- 1161-63 Mission Street (1924) [X] {C}

- 1183-85 Mission Street (1921) [X] {C}

- 100-20 Seventh Street (Mayre Building, 1911) [x] {C}

- 101-09 Seventh Street (Grand Southern Hotel, 1911C) [x] {C}

Several properties located on the project site and/or within the APE for the Seventh and Mission Site appear (in the opinion of SBRA) to be eligible for listing on the National Register of Historic Places as potential contributors to an enlarged Market Street Theater and Loft District:

- 30-34 Seventh Street. A small, three-story commercial building constructed in 1907. The Italian design was prepared by the important San Francisco architectural firm of William Curlett and Son. Slightly altered on the street level, but capable of contributing to a district. [X] {C++}

- 1115-17 Market Street. The western half of a two-part, four-story commercial building constructed in 1923 for William B. Wagnon (the eastern half at 1111-13 is heavily altered). Considerably altered on the ground level, but appears to remain capable of contributing to a district. [X] {C}

- 1125 Market Street. The Bell (presently, Embassy) Theater was first constructed in 1905, repaired in 1907 and altered several times thereafter, primarily on the interior and ground floor. The building is historically important as perhaps the oldest remaining

theater in San Francisco, and certainly as an early survivor. The Renaissance design was prepared by the Reid Brothers architects of San Francisco. Remains capable of contributing to a district. [X] {B}

- 1127 Market Street. The Franchesca (presently, Strand) Theater is a relatively intact early theater, constructed in 1917 of reinforced concrete and a skeletal frame. Alterations appear to be confined to the ground floor and other superficial changes. Remains capable of contributing to a district. [X] {C}

- 36-52 Seventh Street. The five-story brick Odeon Hotel exhibits an essentially Italian Renaissance-style facade rendered in concrete and plaster. It was constructed in 1914 for A. Vayssie, and designed and constructed by the San Francisco firm of Fabre and Bearwald. The ground floor street-frontage was extensively altered circa 1950, when the building was converted into a Greyhound Bus terminal. Remains capable of contributing to a district. Located on the project site. [X] {C}

- 54-60 Seventh Street. The four-story brick Hotel St. Raphael, was constructed in 1907, an example of the generic neoclassical mode with mode Italian Renaissance Revival influences by Charles Paff & Company, architects. Like its neighbor to the north, the ground floor street-frontage was extensively altered circa 1950, when the building was converted into a Greyhound Bus terminal. Remains capable of contributing to a district. Located on the project site. [X] {C}

Buildings located within the APE for the Seventh and Mission Alternative Site which appear to be ineligible due to age or alterations:

- 1111-13 Market Street (1923, altered). [X] {X}
- 1133-39 Market Street (1906, altered). [X] {X}
- 1145 Market Street (One Trinity Center, 1989). [X] {X}
- 1155 Market Street (Continental Building, circa 1985). [X] {X}
- 1169 Market Street (Town House Motel, 1960). [X] {X}
- 1133-37 Mission Street (Knights of the Red Branch, 1909, altered). [X] {X}
- 1167 Mission Street (1917, altered). [X] {X}
- 1171-79 Mission Street (circa 1955). [X] {X}

APPENDIX

Foundation for San Francisco's Heritage Survey

Previous Surveys and Determinations. With the establishment of the Landmarks Preservation Advisory Board in 1967, many architecturally and historically significant buildings have been listed as landmarks or historic districts. In addition, historic surveys have been conducted by the City Planning Department (San Francisco Department of City Planning, 1976), and by the Foundation for San Francisco's Heritage (Corbett, 1979). The ratings used by Heritage in the final evaluation of surveyed buildings are:

A. **Highest Importance** – Individually the most important buildings in downtown San Francisco, distinguished by outstanding qualities of architecture, historical values, and relationship to the environment. All A-group buildings are eligible for the National Register, and of highest priority for City Landmark status.

B. **Major Importance** – Buildings which are of individual importance by virtue of architectural, historical, and environmental criteria. These buildings tend to stand out for their overall quality rather than for any particular outstanding characteristics. B-group buildings are eligible for the National Register, and of secondary priority for City Landmark status.

C. **Contextual Importance** – Buildings which are distinguished by their scale, materials, compositional treatment, cornice, and other features. They provide the setting for more important buildings and they add visual richness and character to the downtown area. Many C-group buildings may be eligible for the National Register as part of historic districts.

D. **Minor or No Importance** – Buildings which are insignificant examples of architecture by virtue of original design, or more frequently, insensitive remodeling. This category includes vacant buildings and parking lots. Most D-group buildings are "sites of opportunity."

Not Rated: Buildings which have been built or suffered insensitive exterior remodelings since 1945 (Corbett, 1979:12-13).

Table 1 summarizes the ratings assigned by the 1979 San Francisco Heritage Survey.

SELECTED SOURCES

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City and County of San Francisco. *The San Francisco Master Plan.*

City and County of San Francisco. *San Francisco Courts Building Environmental Impact Report.*

City and County of San Francisco. *San Francisco Main Library Environmental Impact Report.*

City and County of San Francisco. *Bank of America Building Environmental Impact Report.*

Corbett, Michael R. *Splendid Survivors: San Francisco's Downtown Architectural Heritage.* San Francisco: California Living Books, 1979.

Corbett, Michael R. *National Register of Historic Places Inventory Nomination form for San Francisco Civic Center,* 1976.

Ehrenkrantz Group. *Historic Structures Report, U.S. Court of Appeals and Post Office.* San Francisco: Architectural Resources Group, no date.

Gebhard, David, Sandweiss, Eric, and Winter, Robert. *The Guide to Architecture in San Francisco and Northern California.* Revised edition. Salt Lake City: Gibbs M. Smith, 1985.

Hart, James D. *A Companion to California.* New York: Oxford University Press, 1978.

McGrew, Patrick. *Landmarks of San Francisco.* New York: Harry N. Abrams, Inc., 1991.

Woodbridge, Sally B., Woodbridge, John M. *San Francisco Architecture.* San Francisco: Chronicle Books, 1992.

Table One

Address	Date	SFH Rating	Integrity	Historic Name	Arch/Eng/Builder
Howard Street					
1380	1927	B	good	GW Haas & Sons Bldg	Willis C. Lowe (A)
Market Street					
1095-97 (25-27 7th)	1905/06	A	good	Joseph D. Grant Bldg	Newton Tharp (A)
1111-13	1923	D	poor	Wm. B Wagnon Bldg	
1115-17	1923	C	fair	Wm. B Wagnon Bldg	
1125	1905/07	B	fair	Bell/Embassy Theater	Reid Brothers (A)
1127	1917	C	good	Franchesca Theater	
1133-39	1906/65 (c)	D	poor	Hotel	
1145 (?)	1989		n/a	One Trinity Center	Backen, Arrigoni & Ross (A)
1155	1985 (c)		n/a	Continental Bldg	
1169	1960		n/a	Town House Motel	
1301-75	1937	B	good	Western Furn Exch/Merchandise Mart	
1390	1967		n/a	Fox Plaza	Victor Gruen & Assoc. (A)
1400-28	1907/39	D	fair	Grand Central Hotel	WF Heibling/HJ Brunnier (A)
1401-29 (16-18 10th)	1926/60 (c)		poor	Symon Bros Bldg (?)	
1431-35	1924/50 (c)		poor		
1440-44	1913	C	good-	McGovern Bldg	TH Lentzen (A)
1446	1916/55 (c)		poor		JH Hjul (B)
1455	1974 (c)		n/a	Bank of America Computer Center	
1484-98	1960 (c)		n/a		
1525	1975 (c)		n/a	Bank of America	
Mission Street					
1068	1910 (c)		fair		
1077-81	1920 (c)		good		
1083-85	1906		good		Salfield & Colberg (A)
1087-89	1921		good	L. Lurie Bldg (?)	O'Brien Bros (A)
1119-21	1907	C	good		
1125-27	1927	B (?)	good	Hess Garage	JH Hjul (E)
1131	1923	C	good	Confectioner's Exch	O'Brien Bros (A)
1133-37	1909		poor	Knights of the Red Branch	FT Shea & J Lofquist (A)
1139	1921		fair	coffee roasting plant	Weeks & Day (A)
1145-9	1910		fair+		JV Campbell (B)
1151-53	1910	C	good	Dr. Chas Bauer Bldg (?)	A Schroepter & H Skidmore (A)
1155	1914	C	good	McLaughlin Bldg (?)	Wm H Crim, Jr. (A)
1161-63	1924	C	good-	Bucher Co	WA Stephen (A)
1167	1917	C	poor	La Verité Bldg (?)	JH Hjul (B)
1171-79	1955 (c)		n/a		
1183-85	1921	C	fair+	truck sales	TW Lentzen
1310	1946		n/a		
1320-28	1931		good	Doris Bldg	
1321-25	1975 (c)		n/a		
1336-38	1923	C	good	Jame J. Hjul Bldg	
1337	1920 (c)		poor		

Table One

Address	Date	SFH Rating	Integrity	Historic Name	Arch/Eng/Builder
1339	1912		poor		
1340	1930	C	fair		
1345	1925	C	fair		
1349	1915 (c)		poor		
1360-66	1929	C	fair	Thomas Dyeing & Cleaning Co.	
1365-85	1925	C	good		
1370-72	1907	C	fair		
1390	1970 (c)		n/a		
1449-53	1913	B	good	Gantner & Mattern Co. Mill	GW Kelham (A)
1475					
7th Street					
6-26 (1107 Market)	1909	A	good	Odd Fellows Hall	GA Dodge (A)
30-34	1907	C++	good		Wm Curlett & Son (A)
36-52	1914	C	fair	Hotel Odeon	Fabre & Bearwald (A/B)
54-60	1907	C	fair	Hotel St. Raphael	Charles Paff & Co (A)
95	1897-1905		good	US Post Office & Court Hse	James Knox Taylor (A), et al.
100-120	1911	C	good	Mayre Bldg/Hotel Gordon	Cunningham & Politco (A)
101-109	1911	C	good-	Grand Southern Hotel	AR Denke & C McManus (A)
9th Street					
80-90	1908	C	good	New Claremont Hotel	Julius E. Krafft (A)
10th Street					
16	1955 (c)		n/a		
18	1940 (c)		poor		
20-22	1950		n/a		
24-70	1929/35	C	good-	E Swift Bldg (?)	WO Peugh (A)
27	1975 (c)		n/a		
76	1955 (c)		n/a		
100	1955 (c)		n/a		
113	1920 (c)		poor		
120-22	1915 (c)		fair+		
123-31	1920 (c)		poor		
128-30	1925 (c)		good		
134-42	1923	C	good	Lurie Bros Auto Body	O'Brien Bros (A)
135-41	1925	C++	good		JH Hjul (E)
145-49	1924	C++	fair	FW Hess Garage	JH Hjul (E)
154	1912		good		
151-155	1925		fair	Feldman Auto Metal Works	WL Schmolle (A)
160	1923	C++	good	Merton J. Rice Bldg (?)	DA Riedg (A/E)
165	1907	A	good	Jos Lick Baths	JW Rolliver (A)
170-90	1970 (c)		n/a		



Photo 1

1401-29 and 1435 Market Street –

7 March 1994

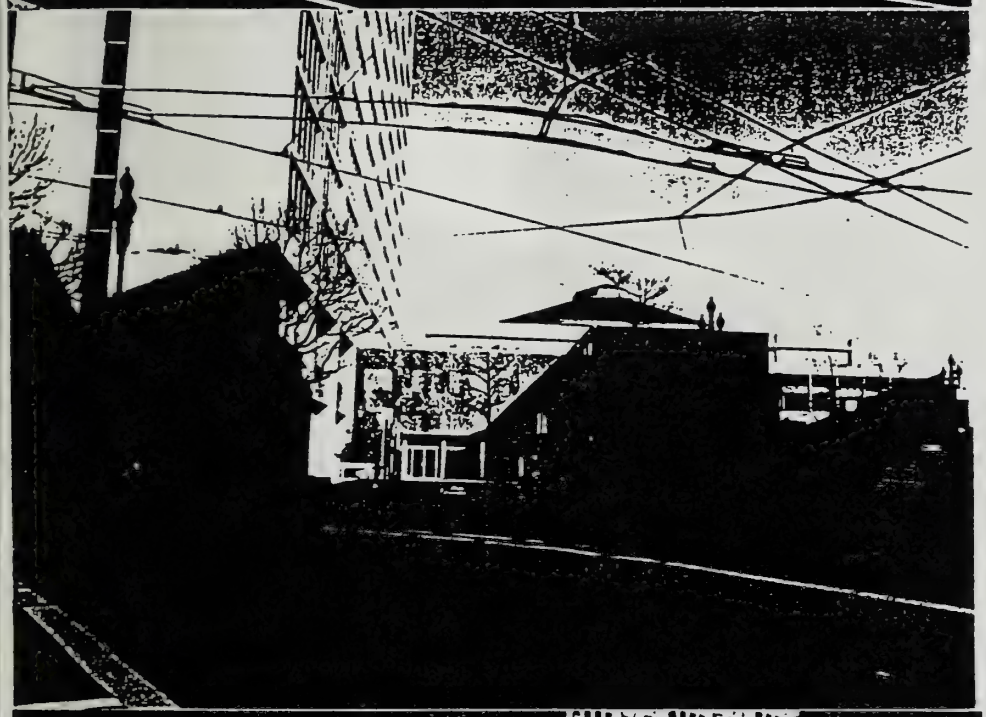


Photo 2

1390 Market Street -- Fox Plaza

7 March 1994



Photo 3

1400-1420 Market Street

7 March 1994

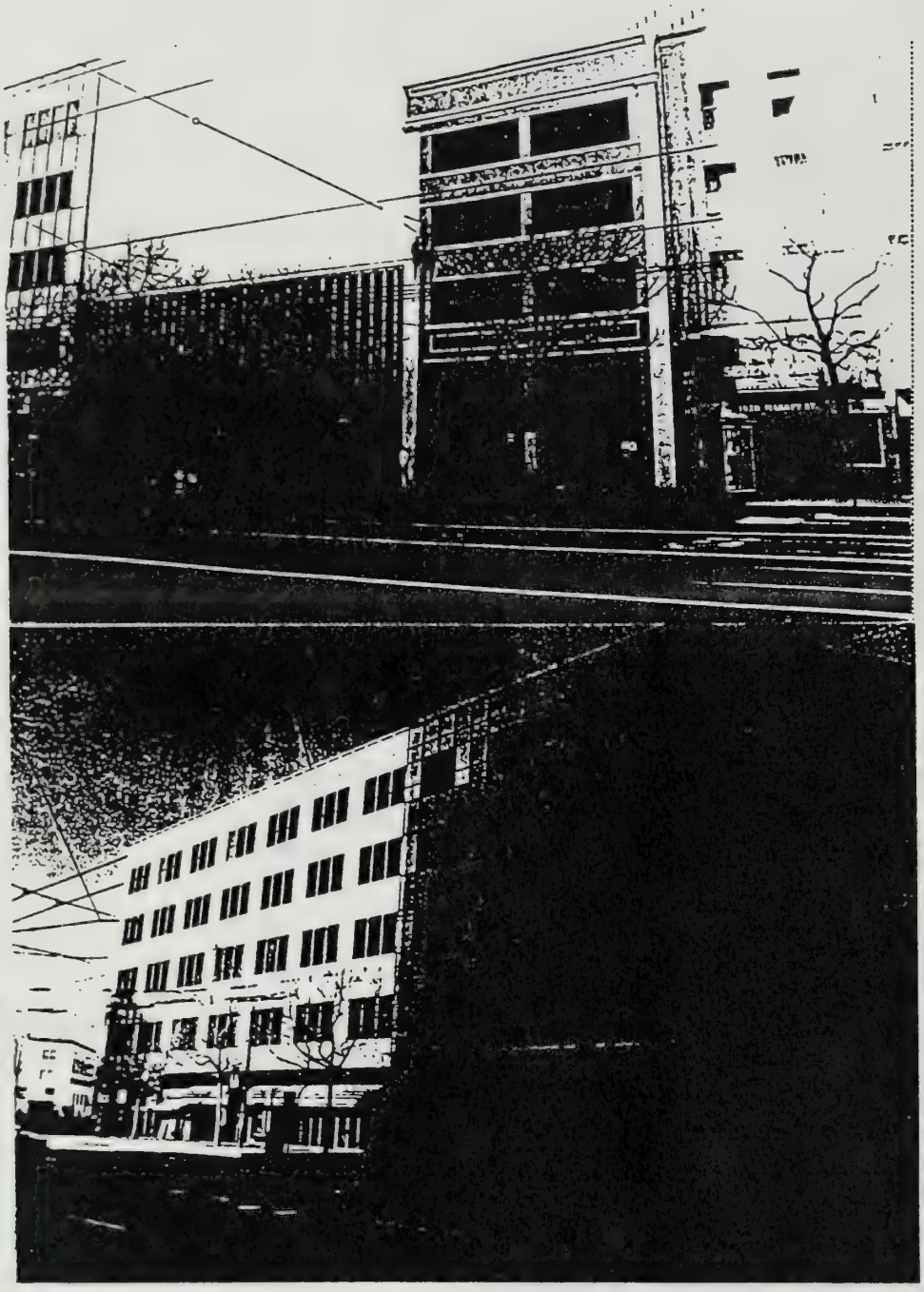


Photo 4

1440-44, 1446 Market Street

7 March 1994

Photo 5

1484-98 Market Street

7 March 1994

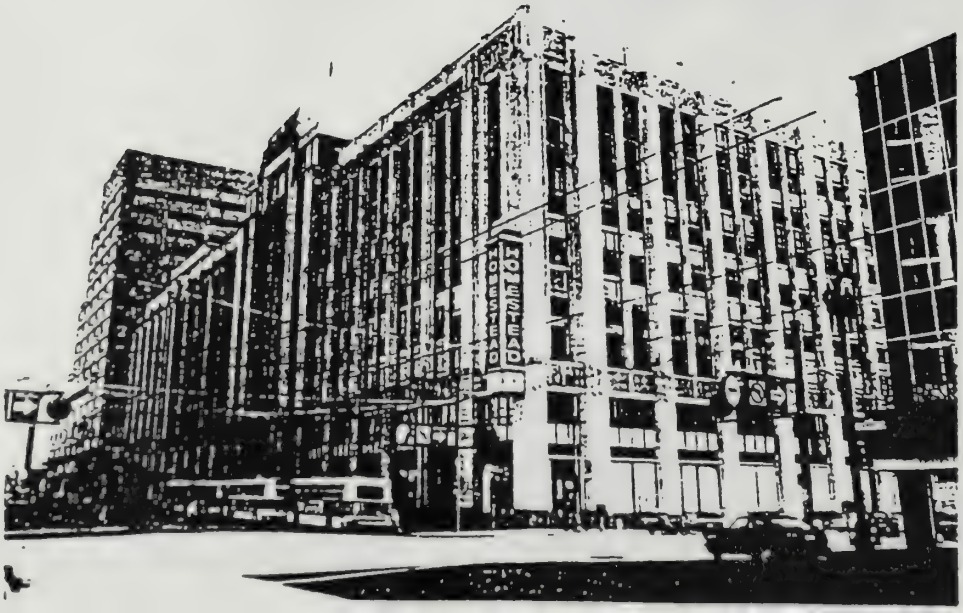


Photo 6

1301-75 Market Street (Western Furniture Mart)--

7 March 1994

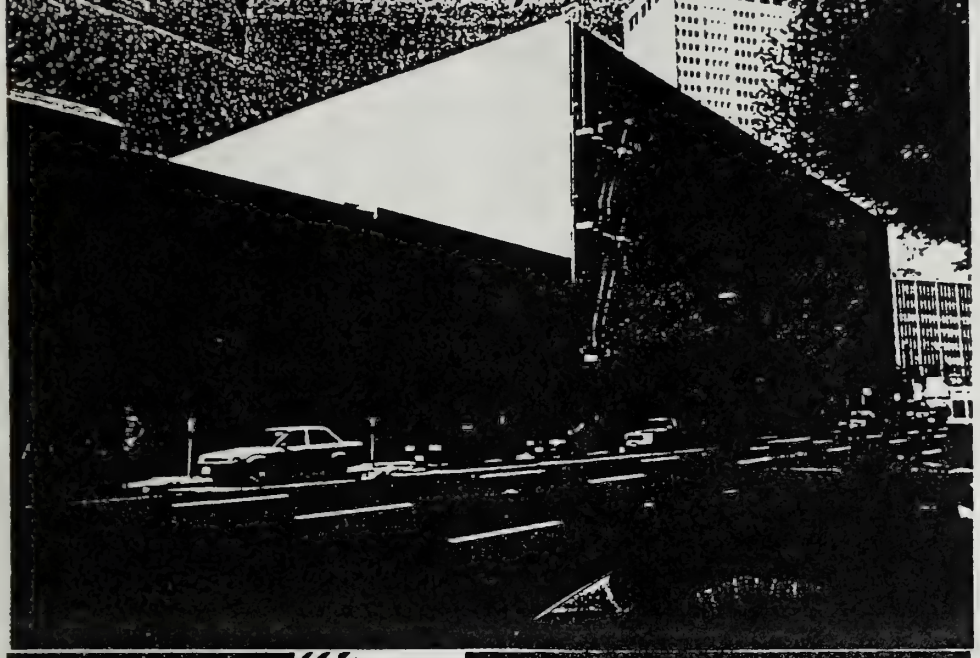


Photo 7

16,18, 20-22, 24-30 10th Street --

7 March 1994

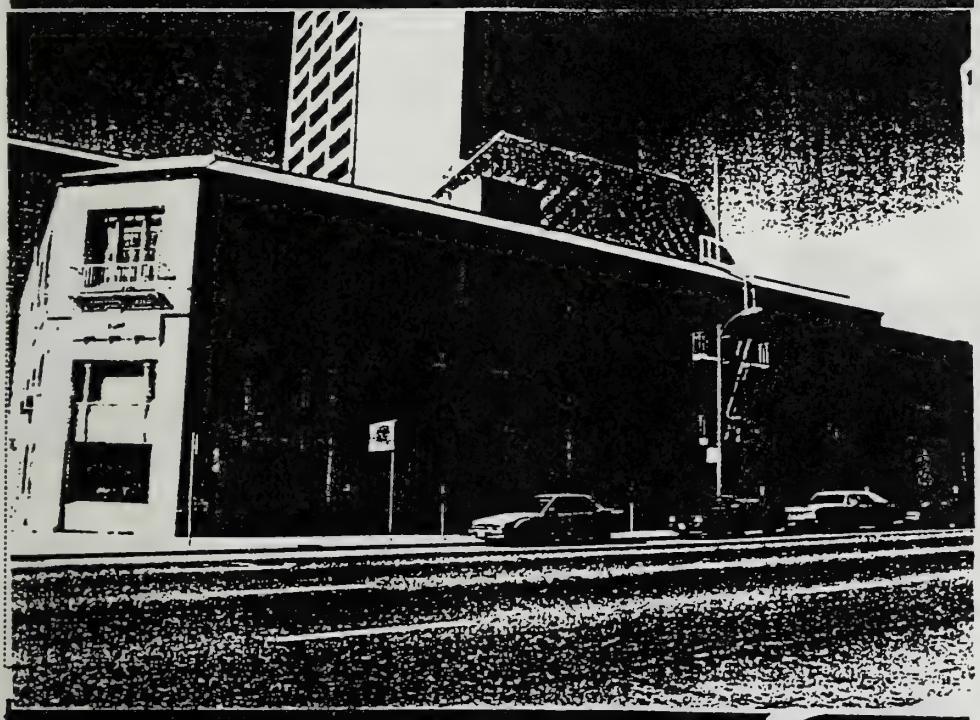


Photo 8

54-70 10th Street --

7 March 1994



Photo 9

76 10th Street

7 March 1994



Photo 10
27 10th Street

7 March 1994



Photo 11
65 Tenth Street

7 March 1994



Photo 12
100 Mission Street

7 March 1994



Photo 13

1449-53 Mission Street (Ganter & Mattern Co. Mill building)

7 March 1994



Photo 14

1475 Mission Street

7 March 1994



Photo 15

36-52, 54-60 7th Street -- 7th & Mission project site

7 March 1994



Photo 16

7th & Mission project site -- parking lot, facing northwest

7 March 1994



Photo 17

30-34, 6-26 7th Street -- adjacent to project site

7 March 1994



Photo 18

95 7th Street (U.S. Post Office & Court of Appeals)

7 March 1994



Photo 19
1068 Mission Street

7 March 1994



Photo 20
101-09 7th Street

7 March 1994



Photo 21
1077, 1083-85, 1087 Mission Street

7 March 1994



Photo 22

100-120 7th Street -- south of project site

7 March 1994



Photo 23

1119-21, 1125, Mission Street -- south of project site

7 March 1994



Photo 24

1131, 1133-37 Mission Street -- south of project site

7 March 1994

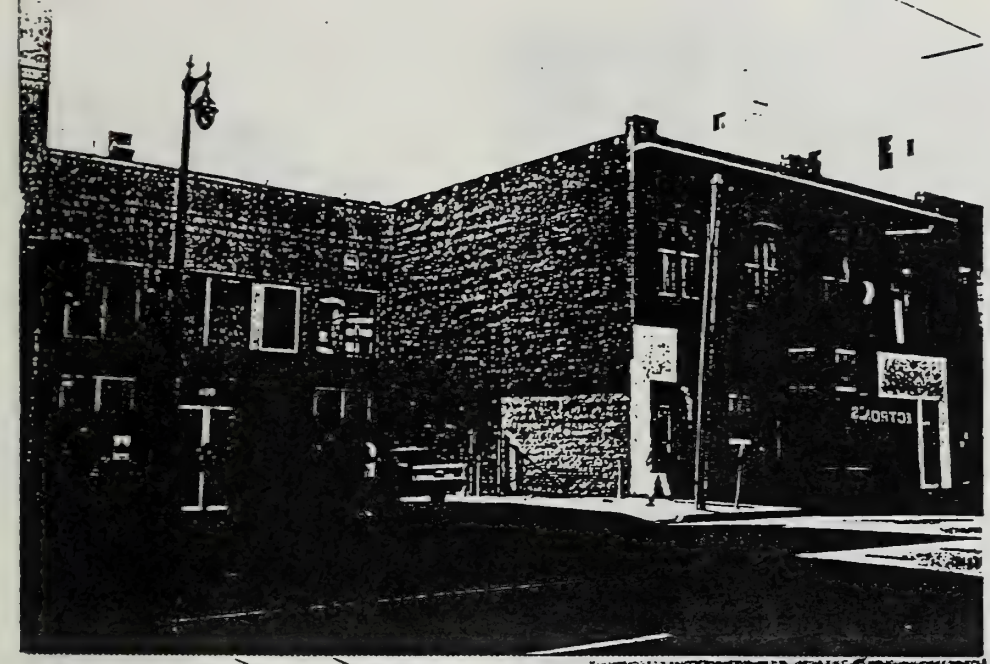


Photo 25

1139, 1145-49 Mission Street

7 March 1994



Photo 26

1145-49, 1151-53, 1155, 1161-63 Mission Street

7 March 1994



Photo 27

1167, 1171-79, 1183-85 Mission Street

7 March 1994



Photo 28

1095-97 Market St. (Grant Building) and 6-26 7th Street (Oddfellows Temple)

7 March 1994



Photo 29

1111-13, 1115-17, 1125 (Embassy Theater) Market Street

7 March 1994



Photo 30

1127, 1133-39,1145, 1155, (1 Trinity Plaza) Market St.

7 March 1994



Photo 31

1169 Market Street

7 March 1994



Photo 32

View looking south at 7th and Market St. toward project site

7 March 1994



Photo 33

View from Civic Center toward 7th and Market St. (Grant building, Oddfellows Temple, Embassy Theater)

7 March 1994

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State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
DISTRICT RECORD

Primary # _____
HRI # _____
Trinomial _____

NRHP Status Code

Resource Name or #: (Assigned by recorder) *Market Street Loft/Theater District*

D1. Historic Name: *none*

D2. Common Name: *Theater and Loft District*

D3. Detailed Description (Discuss overall coherence of the district, its setting, visual characteristics, and minor features. List all elements of district.):

The presently listed (4/10/86) Loft/Theater National Register historic district is composed predominantly of medium-rise commercial buildings on the north and south sides of Market Street, beginning mid-block between Fifth and Sixth streets, and continuing to the intersection of Seventh Street. Three properties on the south side of Market Street between 7th and 8th streets, and three contiguous properties on 7th Street also appear to be eligible as contributors to an enlarged district. Historic land uses within the existing and potentially expanded district include theaters, hotels and general commercial buildings. The currently listed NRHP district includes one hotel, three theaters and 18 commercial buildings. The additional properties which also appear to be eligible as contributors to an slightly enlarged district include two theaters, two hotels and two general commerical buildings.

The grouping is architecturally unified by its consistent mid-rise scale (3-6 stories, with the exception of the eight-story Grant Building at the intersection of Market and Seventh streets), and the classically-derived architectural styles and fire-resistant building techniques characterizing the post-earthquake rebuilding period.

The elements of the district are listed on a continuation sheet.

D4. Boundary Description (Describe limits of district and attach map showing boundary and district elements.):

see attached map

D5. Boundary Justification:

Includes the properties presently listed on the NRHP, and six, additional contiguous and thematically linked properties (see continuation sheet and map).

D6. Significance: Theme **Area**

Period of Significance *1905-1935* **Applicable Criteria** *A, C* Discuss district's importance in terms of its historical context as defined by theme, period of significance, and geographic scope. Also address the integrity of the district as a whole.)

This district appears to be eligible for listing on the NRHP under Criterion A (events) as a fine representative, and largely cohesive, example of the post-earthquake rebuilding efforts. Within a three-year period after the earthquake of 1906, virtually the entire downtown commercial district had been rebuilt, and the relatively small number of survivors rehabilitated. Had the city adopted the Burnham "City Beautiful" plan of 1905, the essential character of the post-earthquake city would have been very different. Instead, the city was permitted to rebuild on its pre-disaster lot pattern, allowing Market Street to regain its previous status as the major commercial artery of the city. Anticipation of the Panama Pacific Exhibition of 1915 provided another boost to development, contributing particularly to the construction of numerous hotels. [continued]

D7. References (Give full citations including the names and addresses of any informants, where possible.):

Corbett, Michael R. and Charles Hall Page & Assoc., Inc. Splendid Survivors: San Francisco's Downtown Architectural Heritage. The Foundation for San Francisco's Architectural Heritage: San Francisco, 1979.

D8. Evaluator: *M. Stone* **Date:** *1/4/96*

Affiliation and Address: *San Buenaventura Research Associates, 627 E. Pleasant St., Santa Paula CA 93060*

Buildings contributing to Listed NRHP District:

Market Street

973-77 — Wilson Building, 1908 (architect unknown)
979-89 — Hale Brothers, 1902, 1907 (Reid Brothers)
980 — Crest Theater, circa 1935 (architect unknown)
982 — Loew's Warfield Theater, 1921 (GA Lansburgh)
995-97 — Hewes Building, 1908 (Reid Brothers)
1000-26 — San Cristina Building, 1913 (architect unknown)
1001-05 — Delger Building, 1908 (architect unknown)
1008 — commercial building, 1911 (architect unknown)
1019-21 — Eastern Outfitting Building, 1909 (GA Applegarth)
1023 — commercial building, 1907 (architect unknown)
1025 — commercial building, 1907 (architect unknown)
1028-56 — Bijou Theater, 1907 (architect unknown)
1035,1043-45 — commercial buildings, 1933 (architect unknown)
1049 — Sterling Building, 1907 (architect unknown)
1053-55 — Forrest Building, 1908 (MacDonald & Applegarth)
1059-61 — Ede Building, 1910 (WE Knowles)
1063 — commercial building, 1909 (architect unknown)
1067-71 — Lippert Building, 1924 (architect unknown)
1072-98 — Crocker Building, 1911 (HH Winner)
1083-87 — Federal Hotel, 1912 (William Curlett)
1095-97 — Grant Building, 1905-06 (Newton Tharp)

Seventh Street

6-26 — Odd Fellow's Temple, 1909 (GA Dodge)

Additional Potential Contributors:

Market Street

1115-17 — William P. Wagnon Building, 1923 (architect unknown)
1125 — Bell (Embassy) Theater, 1905-7 (Reid Brothers)
1127 — Strand (Franchesca) Theater, 1917 (architect unknown)

Seventh Street

30-34 — commercial building, 1907 (William Curlett & Sons)
36-52 — Odeon Hotel, 1914 (Fabre & Bearwald)
54-60 — Hotel St. Raphael, 1907 (Charles Paff & Co.)

This district also appears to be eligible for listing on the NRHP under Criterion C (design), as a fine, representative grouping of post-earthquake steel-frame buildings. The earthquake and fire destroyed virtually the entire Victorian-era commercial building stock in the city. San Francisco emerged from the subsequent rebuilding period as a city architecturally transformed, though certainly not to the extent that it might have been had the Burnham plan been implemented. Local variations of Beaux Arts classicism, the stylistic choice of the City Beautiful architects, already beginning to affect architectural tastes during the period immediately prior to the disaster, flourished during the rebuilding era. Experiments in steel-frame and concrete and curtain-wall structural techniques used commonly during this period established the city as an important laboratory for the modernistic expression of structural form. For these efforts, San Francisco began to rival the famously inventive "Chicago School" for architectural innovations. A number of noteworthy San Francisco architectural firms participated in the post-earthquake and fire rebuilding period. Several are represented here, including Reid Brothers, GA Lansburgh, GA Applegarth,WE Knowles, HH Winner, William Curlett, Newton Tharp, Fabre & Bearwald and Charles Paff & Co.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code ..... Reviewer ..... Date .....

Resource Name or #: (Assigned by recorder) *William B. Wagnon Building*

P1. Other Identifier:

P2. Location: ☐ Not for Publication ☒ Unrestricted **a. County** *San Francisco*
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad **Date** **T** ; **R** ; **1/4 of** **1/4 of Sec** ; **B.M.**

c. Address: *1115-17 Market Street* City *San Francisco* Zip *94103*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

Parcel No.

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This is the western half of a two-part, four-story commercial building constructed of reinforced concrete in 1923 (the eastern half at 1111-13 Market Street is heavily altered). Bands of Chicago-type windows in the upper facade are organized into three bays, with a three-window bay centered on the facade, flanked by two double-window bays. The essentially neo-gothic relief ornamentation is limited primarily to the parapet. Considerable alterations have occurred on the ground floor level, but the building appears to remain capable of contributing to a district. This building was rated "C" (contextual importance) in the San Francisco Heritage Survey. ("Buildings... [which] provide the setting for more important buildings... may be eligible for listing for the National Register as part of historic districts").

P3b. Resource Attributes: (List attributes and codes) *HP7 - 3+ story Commercial Building*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☒ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)



P5b. Description of Photo: (View, date, accession #)
View from north, 3/7/94.

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both
1923 F

P7. Owner and Address
Not known.

P8. Recorded by: (Name, affiliation, and address)
San Buenaventura Research Associates
627 E. Pleasant Street
Santa Paula CA 93060

P9. Date Recorded: *1/4/96*

P10. Survey Type: (Describe)
Project-related (EIR/EIS).

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Francisco Federal Building EIR/EIS

Attachments ☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☐ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code

Other Listings
Review Code _____ Reviewer _____ Date _____

Resource Name or #: (Assigned by recorder) *Bell Theater*

P1. Other Identifier: *Embassy Theater*

P2. Location: ☐ Not for Publication ☒ Unrestricted **a. County** *San Francisco*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad **Date** **T** ; **R** ; **1/4 of** **1/4 of Sec** ; **B.M.**

c. Address: *1125 Market Street* City *San Francisco* Zip *94103*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

Parcel No.

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The Bell (presently, Embassy) Theater is a three-story, brick, concrete and steel frame building first constructed in 1905, repaired in 1907 and altered several times thereafter, principally on the interior and ground floor. The Market Street elevation is organized into three bays, with triple sash windows centered on the facade, flanked by pairs of sash windows. The most visually significant architectural features are the flat pilasters capped with neoclassical capitols defining the bays and building edges, and the prominent, ornamented parapet. The architectural style is essentially Italian Renaissance Revival. A flat, modern marquee is attached above the ground floor level. This building was rated "B" (major importance) in the San Francisco Heritage Survey. ("Buildings which are of individual importance by virtue of architectural, historical and environmental criteria... B-group buildings are eligible for the National Register.")

P3b. Resource Attributes: (List attributes and codes) *HP10 - Theater*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☒ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)



P5b. Description of Photo: (View, date, accession #)
View from north, 3/7/94.

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both

1905 F

P7. Owner and Address
Not known.

P8. Recorded by: (Name, affiliation, and address)
San Buenaventura Research Associates
627 E. Pleasant Street
Santa Paula CA 93060

P9. Date Recorded: *1/4/96*

P10. Survey Type: (Describe)
Project-related (EIR/EIS).

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Francisco Federal Building EIR/EIS

Attachments ☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☒ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☐ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
BUILDING, STRUCTURE, AND OBJECT RECORD

Primary # _____
HRI # _____

NRHP Status Code

Resource Name or #: (Assigned by recorder) *Bell Theater*

B1. Historic Name: *Bell Theater*
B2. Common Name: *Embassy Theater*
B3. Original Use: *Theater* B4. Present Use: *Theater*
B5. Architectural Style: *Italian Renaissance Revival*
B6. Construction History: (Construction date, alterations, and date of alterations)
Constructed 1905, repaired 1907; interior alterations 1913,1915 and 1949. Exterior alterations 1925, 1937 and 1946.

B7. Moved? ☒ No ☐ Yes ☐ Unknown Date : Original Location:
B8. Related Features:

B9a. Architect: *Reid Brothers, CP Weeks, John Paver* b. Builder: *John McBain, Cahill Bros.*
B10. Significance: Theme: **Area:**
Period of Significance: **Property Type:** **Applicable Criteria:** *A*
(Discuss importance in terms of historical or architectural context as defined by theme, period and geographic scope. Also address integrity.)

Construction of the Bell Theater vaudeville house began in 1905. The property owner, Senator Charles N. Felton, retained Reid Brothers architects of San Francisco and John McBain of Menlo Park as the builder. The building was not entirely completed at the time of the 1906 earthquake and fire. It largely survived, but required some repairs, which took place in 1907. The Bell became the Hippodrome Theater in 1913, when the theater began to present motion pictures. Interior remodeling was undertaken in 1913 and 1915, with architect Charles Peter Weeks supervising. During the 1920s, the theater was converted briefly into a college, but returned to theater use in 1925 under the new ownership of William B. Wagnon, who hired John Paver to design alterations to the building's exterior. The theater became known as the Warner Brothers and Rivoli theaters during this era. The name changed for the final time circa 1933, to the Embassy Theater. Storefronts were removed from the ground floor in 1937, and the lobby altered in 1946.

The building is historically important as perhaps the oldest remaining theater in San Francisco, and certainly as an early survivor. It is also notable as reputedly the first movie theater in San Francisco to show "talkies." The Reid Brothers architects also designed two other buildings included in the presently NRHP-listed Theater and Loft District (979-89 Market Street and 995-97 Market Street).

B11. Additional Resource Attributes: (List attributes and codes) *HP10`- Theater*

B12. References:

Pereria, Aston Jr. Historical Report on Embassy Theater – 1125 Market St. San Francisco: Munsell/Brown Partnership, Inc., nd.

Corbett, Michael R. and Charles Hall Page & Assoc., Inc. Splendid Survivors: San Francisco's Downtown Architectural Heritage. The Foundation for San Francisco's Architectural Heritage: San Francisco, 1979.

The Foundation for San Francisco's Architectural Heritage property files.

B13. Remarks:

B14. Evaluator:
Date of Evaluation:

(This space reserved for official comments.)

(Sketch Map with north arrow required.)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code

Other Listings
Review Code _____ **Reviewer** _____ **Date** _____

Resource Name or #: (Assigned by recorder) *Franchesca Theater*

P1. Other Identifier: *Strand Theater*

P2. Location: ☐ Not for Publication ☒ Unrestricted **a. County** *San Francisco*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad **Date** **T** ; **R** ; **1/4 of** **1/4 of Sec** ; **B.M.**

c. Address: *1127 Market Street* City *San Francisco* Zip *94103*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

Parcel No.

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The three story, Franchesca Theater is a relatively intact early theater, constructed in 1917 of reinforced concrete on a skeletal steel frame. Described by Corbett (1979) as, "A curious two-part composition with modified Chicago windows set in vaguely Sullivanesque frames at the second floor and casement windows above [with] Renaissance/Baroque ornamentation." Alterations appear to be confined to the ground floor and other superficial changes. This building was rated "C" (contextual importance) in the San Francisco Heritage Survey. ("Buildings... [which] provide the setting for more important buildings... may be eligible for listing for the National Register as part of historic districts").

P3b. Resource Attributes: (List attributes and codes) *HP10 - Theater*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☒ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)



P5b. Description of Photo: (View, date, accession #)
View from north, 3/7/94.

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both
1917 F

P7. Owner and Address
Not known.

P8. Recorded by: (Name, affiliation, and address)
San Buenaventura Research Associates
627 E. Pleasant Street
Santa Paula CA 93060

P9. Date Recorded: *1/4/96*

P10. Survey Type: (Describe)
Project-related (EIR/EIS).

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Francisco Federal Building EIR/EIS

Attachments ☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☐ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code ____ Reviewer ____ Date ____

Resource Name or #: (Assigned by recorder) *30-34 Seventh Street*

P1. Other Identifier:

P2. Location: ☐ Not for Publication ☒ Unrestricted **a. County** *San Francisco*
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad **Date** **T** ; **R** ; **1/4 of** **1/4 of Sec** ; **B.M.**

c. Address: *30-34 Seventh Street* City *San Francisco* Zip *94103*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

Parcel No.

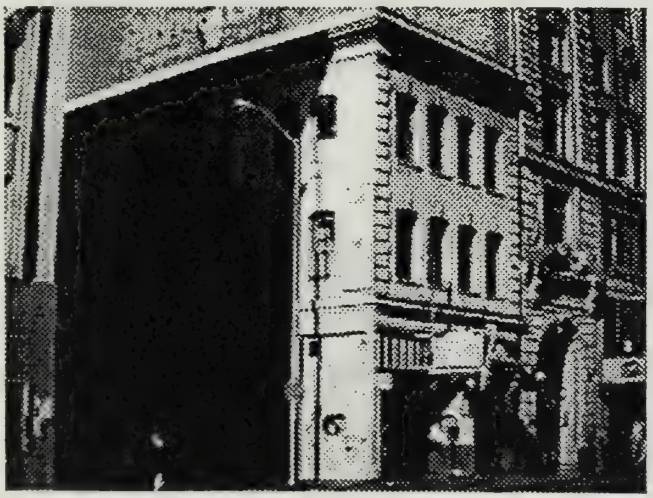
P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This small, three-story commercial building was constructed in 1907. The 7th Street elevation is characterized primarily by four, equally distributed segmental arched window openings, featuring prominent keystones, on the second and third floors. The Italian flavor is completed by heavy quoining at the building corners. This restrained design was prepared by the important San Francisco architectural firm of William Curlett and Son. Slightly altered on the street level. This building was rated "C++" (contextual importance, and presumably bordering on "B," major importance) in the San Francisco Heritage Survey. ("Buildings... [which] provide the setting for more important buildings... may be eligible for listing for the National Register as part of historic districts"). Curlett also designed 1083-87 Market Street (Federal Hotel, 1912), a contributor to the Market Street Theater and Loft NRHP District.

P3b. Resource Attributes: (List attributes and codes) *HP6 - 1-3 story Commercial Building*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☒ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)



P5b. Description of Photo: (View, date, accession #)
View from east, 3/7/94.

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both
1907 F

P7. Owner and Address
Not known.

P8. Recorded by: (Name, affiliation, and address)
San Buenaventura Research Associates
627 E. Pleasant Street
Santa Paula CA 93060

P9. Date Recorded: *1/4/96*

P10. Survey Type: (Describe)
Project-related (EIR/EIS).

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Francisco Federal Building EIR/EIS

Attachments ☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☐ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code

Other Listings
Review Code _____ **Reviewer** _____ **Date** _____

Resource Name or #: (Assigned by recorder) *Odeon Hotel*

P1. Other Identifier:

P2. Location: ☐ Not for Publication ☒ Unrestricted **a. County** *San Francisco*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad **Date** **T** ; **R** ; **1/4 of** **1/4 of Sec** ; **B.M.**

c. Address: *36-52 Seventh Street* City *San Francisco* Zip *94103*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

Parcel No.

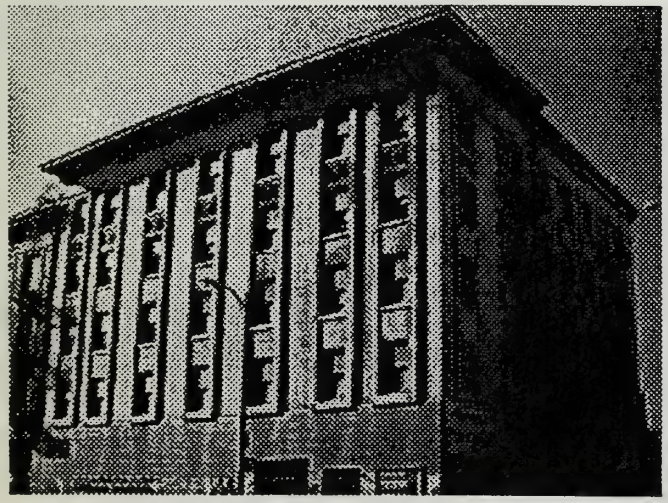
P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The five-story brick Odeon Hotel exhibits an essentially Italian Renaissance-style facade rendered in concrete and plaster. It was constructed in 1914 for A. Vayssie, and designed and constructed by the San Francisco firm of Fabre and Bearwald. The 7th Street elevation features sash windows from the second to the fifth floors enclosed by vertical pilaster elements, somewhat exaggerating the scale of the building. A deep cornice projects from the roofline. Floral and urn bas-reliefs rendered in plaster separate the fourth and fifth floor windows. The ground floor street-frontage was extensively altered circa 1950, when the building was converted into a Greyhound Bus terminal, but is otherwise unaltered. This building was rated "C" (contextual importance) in the San Francisco Heritage Survey. ("Buildings... [which] provide the setting for more important buildings... may be eligible for listing for the National Register as part of historic districts").

P3b. Resource Attributes: (List attributes and codes) *HP5 - Hotel/Motel* *HP7 - 3+ story Commercial Building*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☒ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)



P5b. Description of Photo: (View, date, accession #)
View from north, 3/7/94.

P6. Date Constructed/Age and Sources:
☒ Prehistoric ☐ Historic ☐ Both
1914 F

P7. Owner and Address
Not known.

P8. Recorded by: (Name, affiliation, and address)
San Buenaventura Research Associates
627 E. Pleasant Street
Santa Paula CA 93060

P9. Date Recorded: *1/4/96*

P10. Survey Type: (Describe)
Project-related (EIR/EIS).

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Francisco Federal Building EIR/EIS

Attachments ☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☐ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code

Other Listings
Review Code _____ Reviewer _____ Date _____

Resource Name or #: (Assigned by recorder) *Hotel St. Raphael*

P1. Other Identifier:

P2. Location: ☐ Not for Publication ☒ Unrestricted **a. County** *San Francisco*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad **Date** **T** ; **R** ; **1/4 of** **1/4 of Sec** ; **B.M.**

c. Address: *54-60 Seventh Street* City *San Francisco* Zip *94103*

d. UTM: (Give more than one for large and/linear resources) *11* ; **mE/** **mN**

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

Parcel No.

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The four-story brick Hotel St. Raphael, was constructed in 1907, an example of the generic neoclassical mode with Italian Renaissance Revival influences by the prolific San Francisco firm, Charles Paff & Company. The symmetrical, upper three stories of the 7th Street elevation are composed of paired window bays centered on the facade, with a shallow balcony with an iron railing projecting below, flanked by three sets of single window openings. Pairs of shallow pilasters define the window bays. The projecting cornice line is modestly bracketed. Like its neighbor to the north, the ground floor street-frontage was extensively altered circa 1950, when the building was converted into a Greyhound Bus terminal, but is otherwise unaltered. This building was rated "C" (contextual importance) in the San Francisco Heritage Survey. ("Buildings... [which] provide the setting for more important buildings... may be eligible for listing for the National Register as part of historic districts").

P3b. Resource Attributes: (List attributes and codes) *HP5 - Hotel/Motel* *HP7 - 3+ story Commercial Building*

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☒ District ☒ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)



P5b. Description of Photo: (View, date, accession #)
View from northeast, 3/7/94.

P6. Date Constructed/Age and Sources:
☒ Prehistoric ☐ Historic ☐ Both
1907 F

P7. Owner and Address
Not known.

P8. Recorded by: (Name, affiliation, and address)
San Buenaventura Research Associates
627 E. Pleasant Street
Santa Paula CA 93060

P9. Date Recorded: *1/4/96*

P10. Survey Type: (Describe)
Project-related (EIR/EIS).

P11. Report Citation: (Cite survey report and other sources, or enter "none")
San Francisco Federal Building EIR/EIS

Attachments ☐ NONE ☐ Continuation Sheet ☒ District Record ☐ Rock Art Record ☐ Other: (List)
☐ Location Map ☐ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☐ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

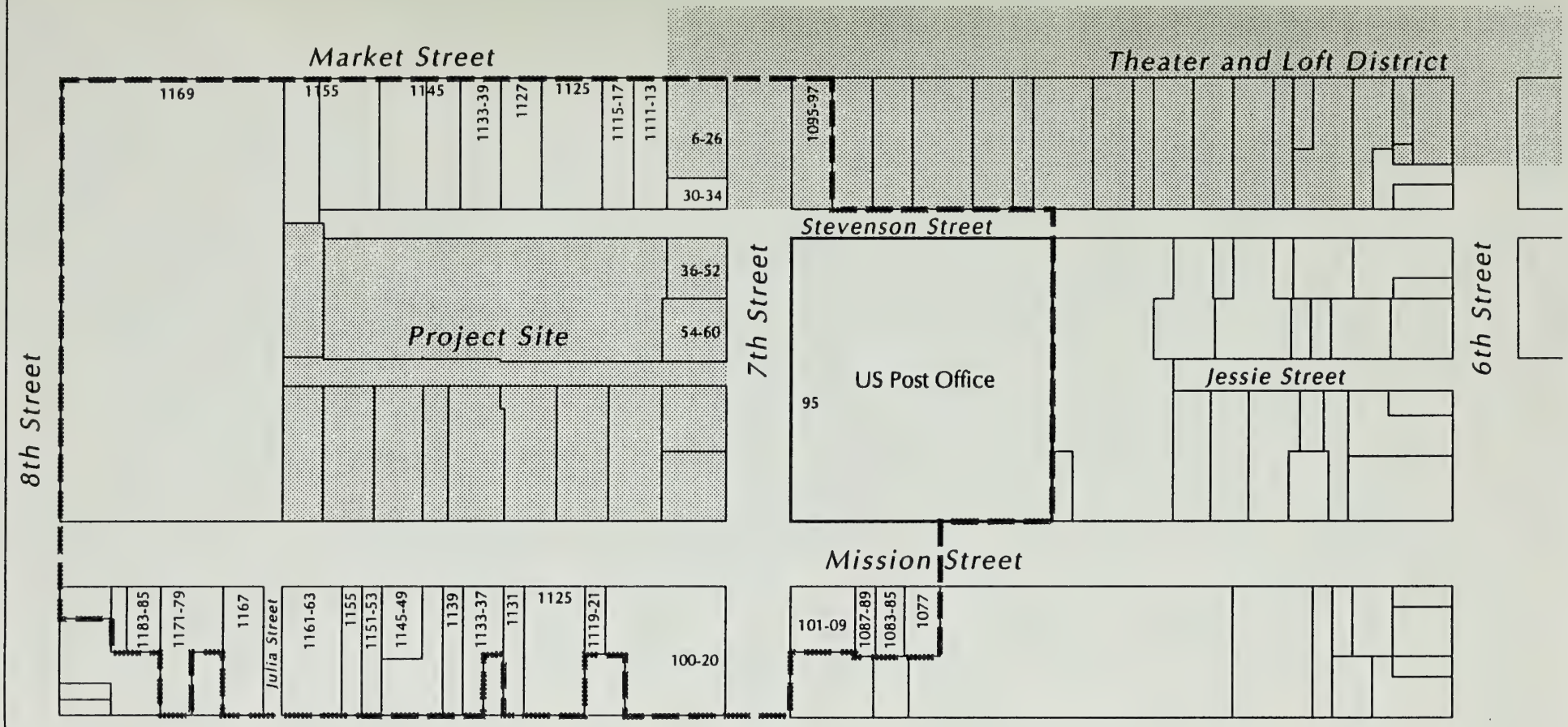


FIGURE 2

San Francisco Federal Building
7th and Mission Site
Historic Resources

Area of Potential Effect

SAN BUENAVENTURA RESEARCH ASSOCIATES

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APPENDIX F
TRAFFIC SURVEY

APPENDIX F
TRAFFIC SURVEY

APPENDICES

A - Description Level of Service Methodology - TJKM ICU
B - LOS Worksheets - Preferred Site
C - Person-Trip Counts and Trip Rate Calculations
D - LOS Worksheets - Alternative Site

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APPENDIX A

DESCRIPTION LEVEL OF SERVICE METHODOLOGY

TJKM ICU

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APPENDIX A

DESCRIPTION LEVEL OF SERVICE METHODOLOGY - TJKM ICU

This method of intersection capacity analysis is known as the Intersection Capacity Utilization (ICU) method. A variation of the TJKM method, known as the critical movement analysis, is described in Interim Materials on *Highway Capacity, Transportation Research Circular 212*, January 1980, published by the Transportation Research Board of the National Academy of Sciences. The TJKM method is similar to the Planning Applications method of signalized Intersection Analysis described in Circular 212. This method addresses the capacity of intersections as a whole. It simulates the operation of an actuated signalized intersection.

The method determines the critical movement by approach. The critical movements are determined by identifying the conflicting movements on the north-south and east-west approaches. The critical movement on an approach with split phase operation is the movement with the highest V/C ratio, since it has no conflicting movements. The method then sums the volume-to-capacity (V/C) ratio of each critical movement at an intersection to produce an overall intersection volume-to-capacity ratio. When the ratio of volume-to-capacity reaches unity (1.00), the intersection is "at capacity" and is described as operating at Level-of-Service (LOS) E and approaching LOS F conditions. If an existing intersection is found to have a V/C ratio greater than 1.0, this indicates that the actual lane capacities are greater than those assumed in the methodology.

The volume-to-capacity ratio is related to the level-of-service. The relationship of volume-to-capacity to level-of-service is a scale with a range of LOS A through LOS F. Figure 7 in the main text depicts the relationship between the level-of-service rating and volume-to-capacity ratio.

The input data necessary to use this methodology are:

- Lane geometrics
- Turning movement volumes
- Split phasing information

The critical movement volume-to-capacity ratios for each signal phase are summed, then rounded to two decimal places. An allowance for yellow time (assumed to be lost time for vehicle movement) is added to obtain the overall intersection volume-to-capacity rating. The amount of added yellow time depends on the degree to which the intersection is saturated, as indicated on the following Table A-1. This table also indicates the default lane capacities.

The lane configuration notation is described in the following Table A-2.

Table A-1

FACTORS FOR TJKM METHODOLOGY

Lane Capacities

Designation	Through Capacity	Turn Capacity[1]
1.0	1,650	1,500
1.1	1,500	1,500
2.0	3,300	2,700
2.1	3,150	2,700
2.2	3,000	2,700
3.0	4,950	3,900
3.1	4,800	3,900
3.3	4,650	3,900
4.0	6,600	n/a
4.1	6,450	n/a

Note: 1. Second (and third) turn lane capacity reduced to 80% of first turn lane (1,500 x 0.8 = 1,200 v/l/h).

Yellow Time Adjustment

Green Time	Add Yellow (Lost) Time	Total
0.71	0.10	0.81
0.72	0.10	0.82
0.73	0.10	0.83
0.74	0.10	0.84
0.75	0.09	0.84
0.76	0.09	0.85
0.77	0.08	0.85
0.78	0.08	0.86
0.79	0.07	0.86
0.80	0.07	0.87
0.81	0.06	0.87
0.82	0.06	0.88
0.83	0.05	0.88
0.84	0.05	0.89
0.85	0.04	0.89
0.86	0.04	0.90
0.87	0.03	0.90
0.88	0.03	0.91
0.89	0.02	0.91
0.90	0.02	0.92
0.91	0.01	0.92
0.92	0.01	0.93
0.93	0.00	0.93

Table A-2

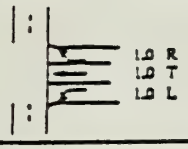
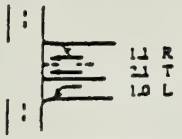
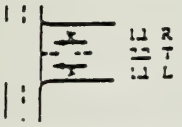
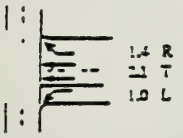
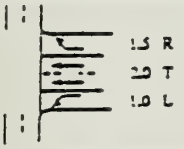
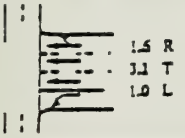
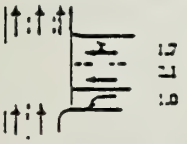
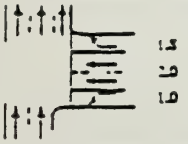
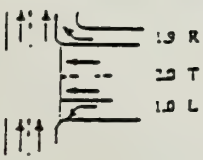
DESCRIPTION OF LANE CONFIGURATION FORMAT

The number of lanes and the use of the lanes is denoted with a special nomenclature described below:

Lane Nomenclature

XY Where X Denotes the total number of lanes available for a particular movement.

Y Denotes how the lanes are used.

When Y is . . .	. . . The following applies:
0 	A lane used exclusively for a particular movement (i.e. exclusive left-turn lane).
1 	A lane which is shared, that is, either of two different movements can be made from a particular lane (i.e. a lane which is shared by through and right-turn traffic).
2 	Denotes two or more through lanes in which two lanes are shared, one with left-turn traffic, the other with right-turn traffic.
3	Denotes an expressway through movement.
4 	Denotes a right-turn movement from a wide outside lane where right-turn vehicles can bypass through traffic sharing the lane to make a right-turn on red.
5 	Denotes a right-turn movement from an exclusive right-turn lane with a right-turn arrow and prohibition on the conflicting U-turn movement.
6 	Denotes a right-turn movement from a shared lane with a right-turn arrow and prohibition on the conflicting U-turn movement.
7,8,9	Denotes a turning movement which has a separate lane to turn into, as shown below:
7 	Turn lane which is shared with a through lane or left-turn lane and under signal control, and which has its own lane to turn into. There must be at least two through lanes.
8 	Exclusive turn lane which is under signal control, and which has its own lane to turn into.
9 	Exclusive turn lane not under signal control and which has an exclusive lane to turn into, often referred to as a "free" turn. Since the volumes in this lane do not conflict with other intersection movements, the V/C ratio of the free right-turn movement is not included in the sum of critical V/C ratios.

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APPENDIX B

LOS WORKSHEETS

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PM PEAK HOUR EXISTING CONDITIONS

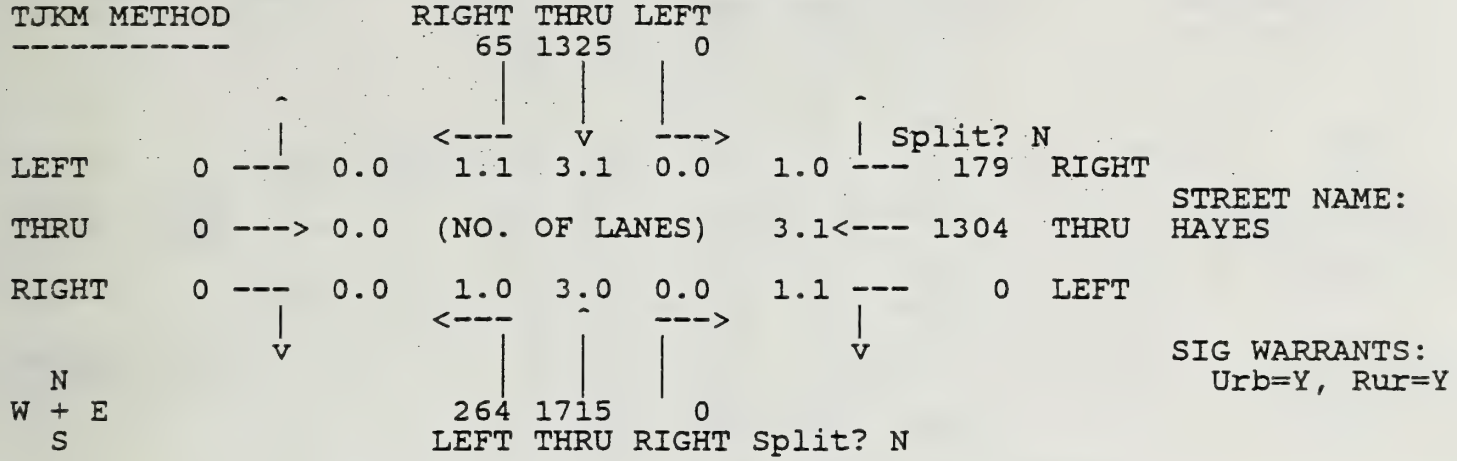
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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM PEAK HOUR -EXISTING CONDITIONS 03/07/94

INTERSECTION 1 VAN NESS AVENUE/HAYES SAN FRANCISCO
Count Date 2/15/94 Time 4:00-6:00 Peak Hour 5:00-6:00

TJKM METHOD



STREET NAME: HAYES

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: VAN NESS AVENUE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB THRU (T)	1715	1715	4950	0.3465	
LEFT (L)	264	264	1500	0.1760	0.1760
SB RIGHT (R)	65	65	1500	0.0433	
THRU (T)	1325	1325	4800	0.2760	
T + R		1390	4800	0.2896	0.2896
WB RIGHT (R)	179	99 *	1500	0.0660	
THRU (T)	1304	1304	4800	0.2717	0.2717
LEFT (L)	0	0	1500	0.0000	
T + L		1304	4800	0.2717	

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.74
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.84
INTERSECTION LEVEL OF SERVICE:	D

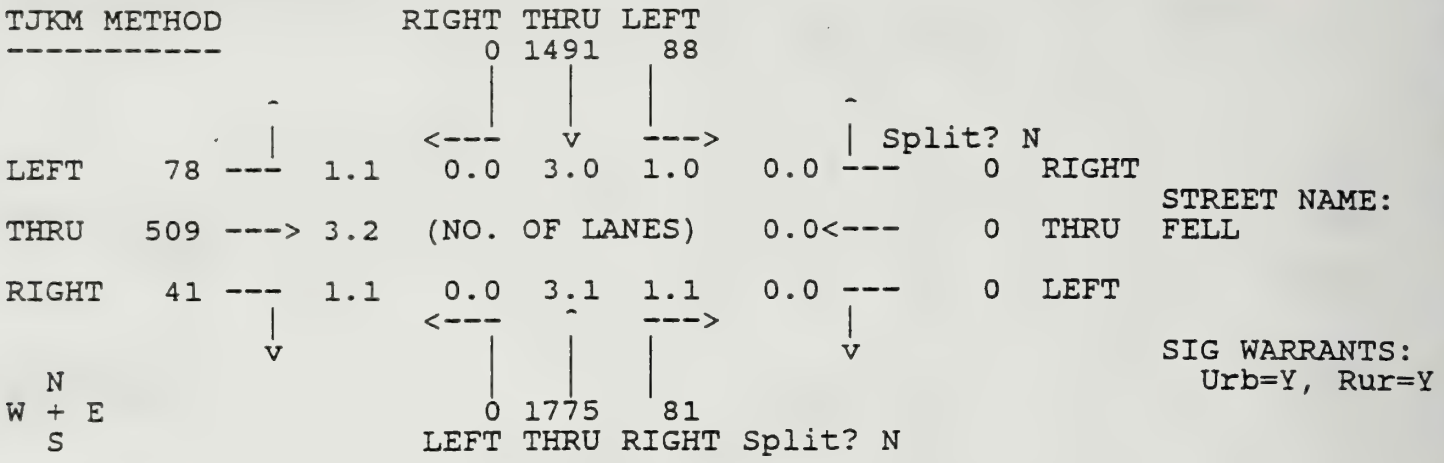
* ADJUSTED FOR RIGHT TURN ON RED
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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM PEAK HOUR -EXISTING CONDITIONS 03/07/94

INTERSECTION 2 VAN NESS AVENUE/FELL SAN FRANCISCO
Count Date 2/22/94 Time 4:00-6:00 Peak Hour 4:30-5:30

TJKM METHOD



STREET NAME: VAN NESS AVENUE

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	81	81	1500	0.0540	
	THRU (T)	1775	1775	4800	0.3698	
	T + R		1856	4800	0.3867	0.3867
SB	THRU (T)	1491	1491	4950	0.3012	
	LEFT (L)	88	88	1500	0.0587	0.0587
EB	RIGHT (R)	41	41	1500	0.0273	
	THRU (T)	509	509	4650	0.1095	
	LEFT (L)	78	78	1500	0.0520	
	T + R		550	4650	0.1183	
	T + L		587	4650	0.1262	
	T + R + L		628	4650	0.1351	0.1351

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.58
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.68
INTERSECTION LEVEL OF SERVICE:	B

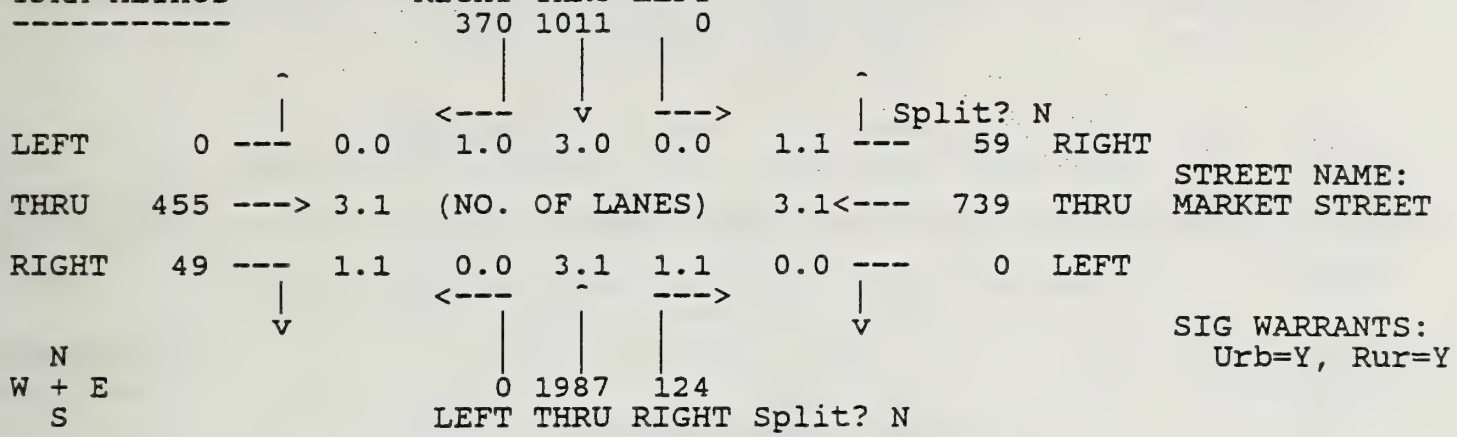
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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM EXISTING CONDITIONS 04/05/94

INTERSECTION 3 VAN NESS AVENUE/MARKET STREET SAN FRANCISCO
Count Date 1/25/94 Time 4:00-6:00 Peak Hour 5:00-6:00

TJKM METHOD



STREET NAME: MARKET STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: VAN NESS AVENUE

MOVEMENT		ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	124	124	1500	0.0827	
	THRU (T)	1987	1987	4800	0.4140	
	T + R		2111	4800	0.4398	0.4398
SB	RIGHT (R)	370	290 *	1500	0.1933	
	THRU (T)	1011	1011	4950	0.2042	
EB	RIGHT (R)	49	49	1500	0.0327	
	THRU (T)	455	455	4800	0.0948	
	T + R		504	4800	0.1050	
WB	RIGHT (R)	59	59	1500	0.0393	
	THRU (T)	739	739	4800	0.1540	
	T + R		798	4800	0.1663	0.1663

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.61
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.71
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

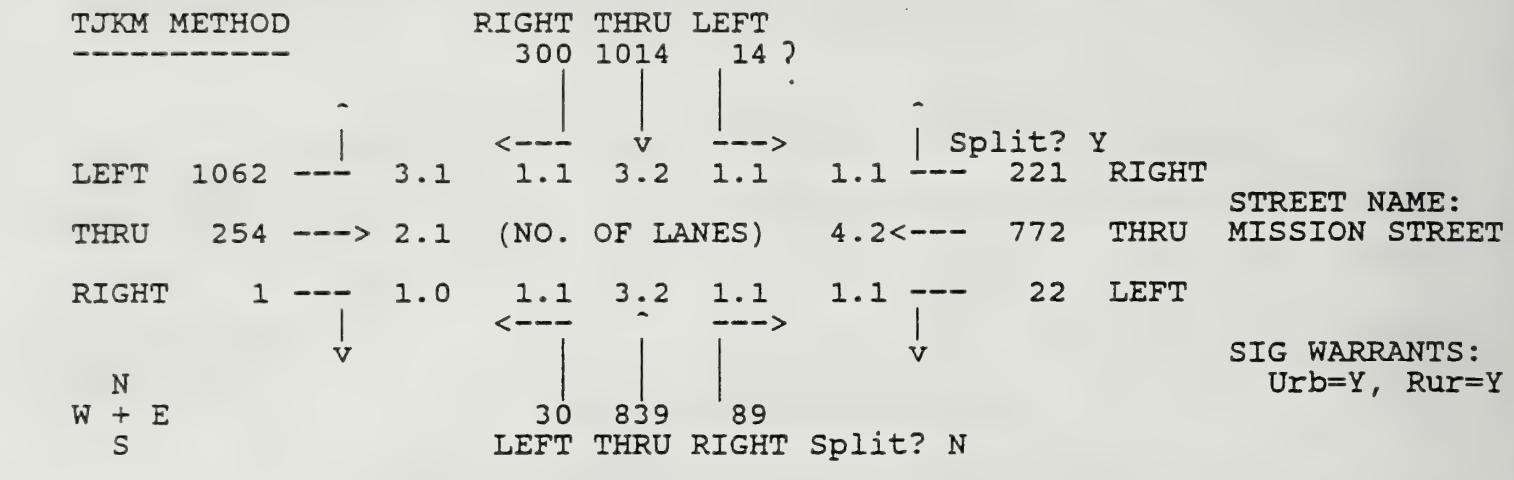
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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM PEAK HOUR -EXISTING CONDITIONS 03/07/94

INTERSECTION 4 S. VAN NESS/MISSION STREET SAN FRANCISCO
Count Date 2/22/94 Time 4:00-6:00 Peak Hour 4:15-5:15 PM

TJKM METHOD



STREET NAME: MISSION STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: S. VAN NESS

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	89	89	1500	0.0593	
	THRU (T)	839	839	4650	0.1804	
	LEFT (L)	30	30	1500	0.0200	0.0200
	T + R		928	4650	0.1996	
	T + L		869	4650	0.1869	
	T + R + L		958	4650	0.2060	
SB	RIGHT (R)	300	300	1500	0.2000	
	THRU (T)	1014	1014	4650	0.2181	
	LEFT (L)	14	14	1500	0.0093	
	T + R		1314	4650	0.2826	
	T + L		1028	4650	0.2211	
	T + R + L		1328	4650	0.2856	0.2856
EB	RIGHT (R)	1	0 *	1500	0.0000	
	THRU (T)	254	254	3150	0.0806	
	LEFT (L)	1062	1062	3900	0.2723	0.2723
	T + L		1316	5550	0.2371	
WB	RIGHT (R)	221	221	1500	0.1473	
	THRU (T)	772	772	6300	0.1225	
	LEFT (L)	22	22	1500	0.0147	
	T + R		993	6300	0.1576	
	T + L		794	6300	0.1260	
	T + R + L		1015	6300	0.1611	0.1611

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.74
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.84
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

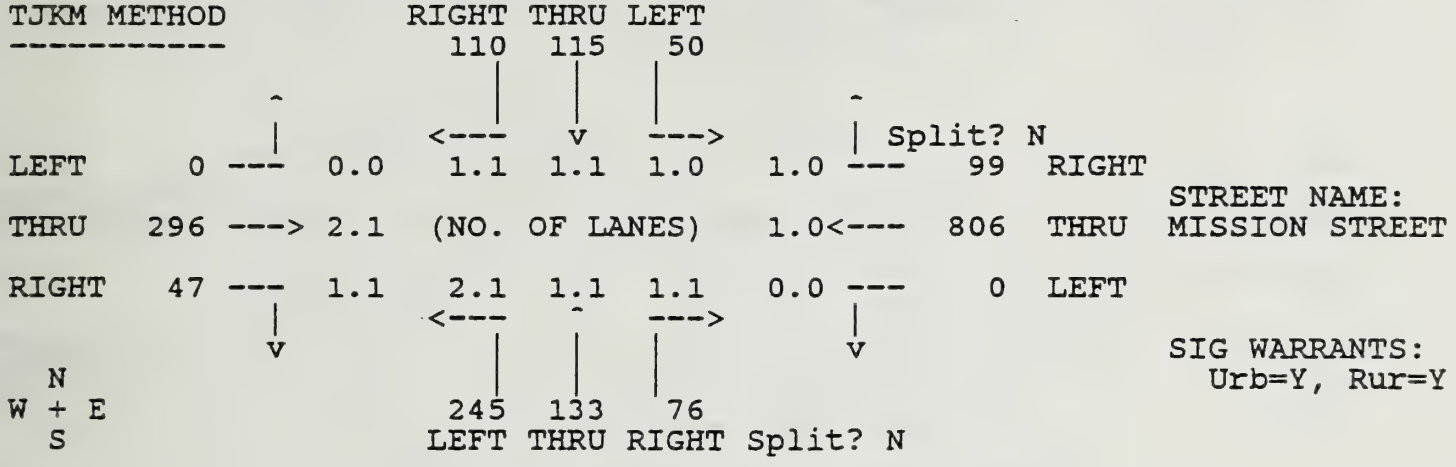
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Condition: PM PEAK HOUR - EXISTING CONDITIONS -DIAMOND LN 03/24/94

INTERSECTION 5 11TH STREET/MISSION STREET SAN FRANCISCO
Count Date 2/22/94 Time 4:00-6:00 PM Peak Hour 4:45-5:45

TJKM METHOD



STREET NAME: MISSION STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: 11TH STREET

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	76	76	1500	0.0507	
	THRU (T)	133	133	1500	0.0887	
	LEFT (L)	245	245	2700	0.0907	0.0907
	T + R		209	1500	0.1393	
	T + L		378	2700	0.1400	
	T + R + L		454	2700	0.1681	
SB	RIGHT (R)	110	110	1500	0.0733	
	THRU (T)	115	115	1500	0.0767	
	LEFT (L)	50	50	1500	0.0333	
	T + R		225	1500	0.1500	0.1500
EB	RIGHT (R)	47	47	1500	0.0313	
	THRU (T)	296	296	3150	0.0940	
	T + R		343	3150	0.1089	
WB	RIGHT (R)	99	0 *	1500	0.0000	
	THRU (T)	806	806	1650	0.4885	0.4885

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.73
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.83
INTERSECTION LEVEL OF SERVICE:	D

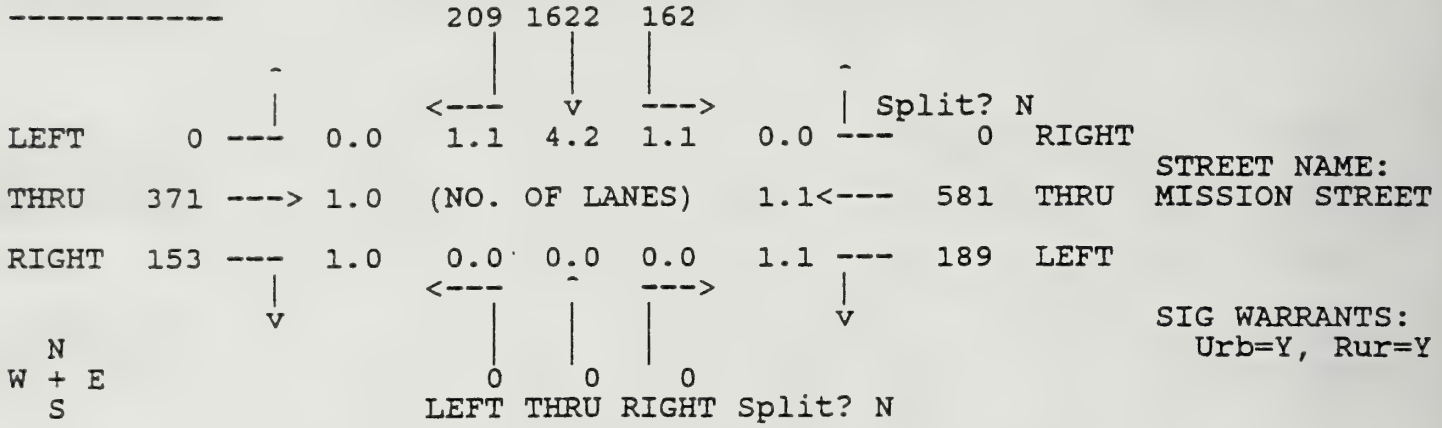
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Condition: PM PEAK HOUR - EXISTING CONDITIONS -DIAMOND LN 03/24/94

INTERSECTION 6 10TH STREET/MISSION STREET SAN FRANCISCO
Count Date 2/15/94 Time 4:00-6:00 Peak Hour 4:15-5:15

TJKM METHOD



STREET NAME: 10TH STREET

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB	RIGHT (R)	209	209	1500	0.1393	
	THRU (T)	1622	1622	6300	0.2575	
	LEFT (L)	162	162	1500	0.1080	
	T + R		1831	6300	0.2906	
	T + L		1784	6300	0.2832	
	T + R + L		1993	6300	0.3163	0.3163
EB	RIGHT (R)	153	73 *	1500	0.0487	
	THRU (T)	371	371	1650	0.2248	
WB	THRU (T)	581	581	1500	0.3873	
	LEFT (L)	189	189	1500	0.1260	
	T + L		770	1500	0.5133	0.5133

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.83
ADJUSTMENT FOR LOST YELLOW TIME:	0.05
TOTAL VOLUME-TO-CAPACITY RATIO:	0.88
INTERSECTION LEVEL OF SERVICE:	D

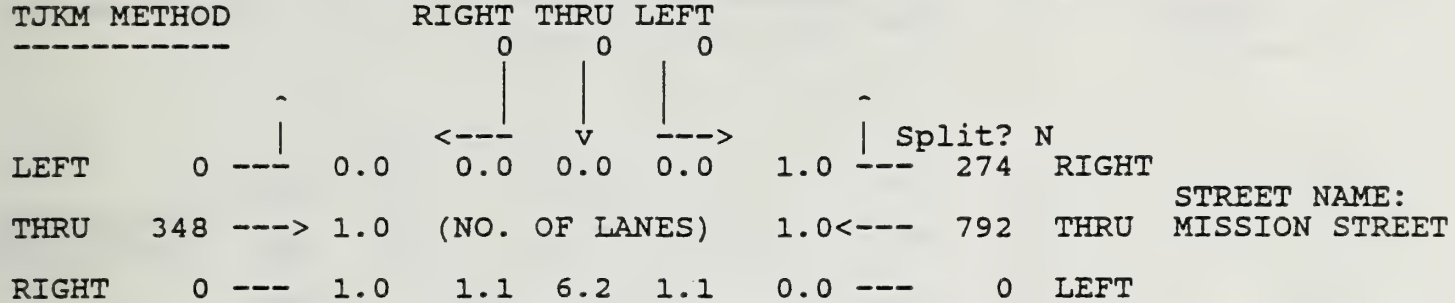
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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM EXISTING (WITH DIAMOND LANES) 03/21/94

INTERSECTION 7 9TH STREET/MISSION STREET SAN FRANCISCO
Count Date 2/23/94 Time 4:00-6:00 Peak Hour 5:00-6:00

TJKM METHOD



STREET NAME: MISSION STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: 9TH STREET

MOVEMENT		ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	34	34	1500	0.0227	
	THRU (T)	2704	2704	9600	0.2817	
	LEFT (L)	132	132	1500	0.0880	
	T + R		2738	9600	0.2852	
	T + L		2836	9600	0.2954	
	T + R + L		2870	9600	0.2990	0.2990
EB	RIGHT (R)	0	0	1500	0.0000	
	THRU (T)	348	348	1650	0.2109	
WB	RIGHT (R)	274	194 *	1500	0.1293	
	THRU (T)	792	792	1650	0.4800	0.4800

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.78
ADJUSTMENT FOR LOST YELLOW TIME:	0.08
TOTAL VOLUME-TO-CAPACITY RATIO:	0.86
INTERSECTION LEVEL OF SERVICE:	D

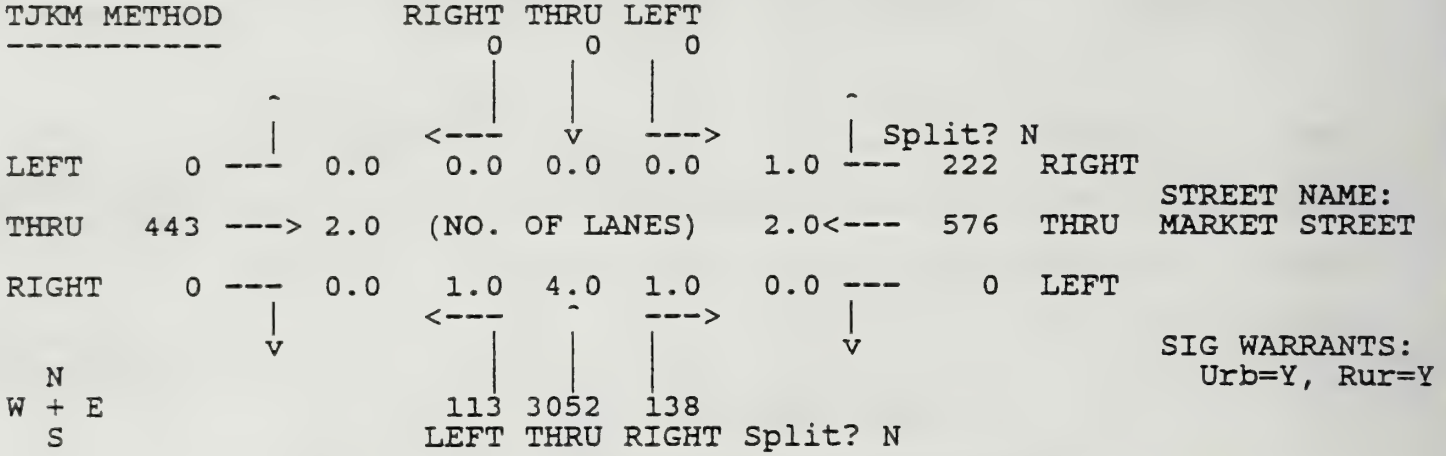
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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM EXISTING CONDITIONS 03/04/94

INTERSECTION 14 9TH/LARKIN/HAYES/MARKET STREET SAN FRANCISCO
Count Date 2/15/94 Time 4:00-6:00 PM Peak Hour 5:00-6:00 PM

TJKM METHOD



STREET NAME: MARKET STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: 9TH/LARKIN/HAYES

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	138	58 *	1500	0.0387	
	THRU - HAYES	1634	1634	3300	0.4952	0.4952
	THRU -LARKIN	1418	1418	3300	0.4297	
	LEFT (L)	113	113	1500	0.0753	
EB	THRU (T)	443	443	3300	0.1342	
WB	RIGHT (R)	222	142 *	1500	0.0947	
	THRU (T)	576	576	3300	0.1745	0.1745

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.67
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.77
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

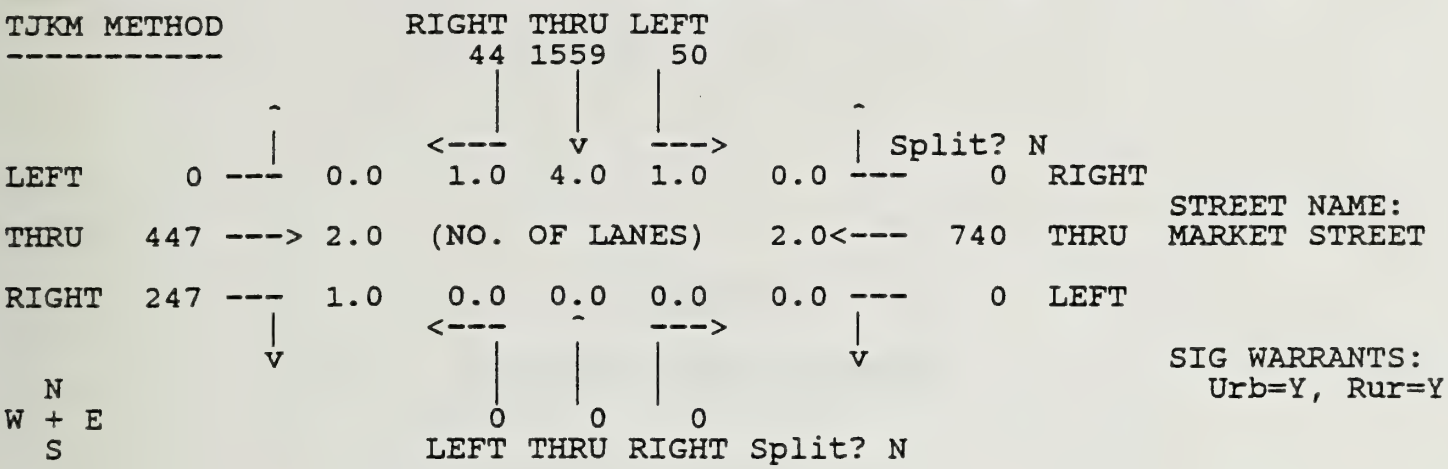
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Condition: PM EXISTING CONDITIONS 03/04/94

INTERSECTION 15 10TH/POLK/FELL/MARKET STREET SAN FRANCISCO
Count Date 2/22/94 Time 4:00-6:0 PM Peak Hour 4:45-5:45 PM

TJKM METHOD



STREET NAME: 10TH/POLK/FELL

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	44	0 *	1500	0.0000	
THRU - POLK	1055	1055	3300	0.3045	0.3197
THRU - FELL	504	504	3300	0.1527	
LEFT (L)	50	50	1500	0.0333	
EB RIGHT (R)	247	167 *	1500	0.1113	
THRU (T)	447	447	3300	0.1355	
WB THRU (T)	740	740	3300	0.2242	0.2242

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.54
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.64
INTERSECTION LEVEL OF SERVICE:	B

* ADJUSTED FOR RIGHT TURN ON RED
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PM PEAK HOUR

EXISTING PLUS PROJECT

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Condition: PM EXISTING + PROJECT 03/21/94

INTERSECTION 1 VAN NESS AVENUE/HAYES SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

			RIGHT	THRU	LEFT					
			65	1325	0					
LEFT	0	0.0	1.1	3.1	0.0	1.0	Split? N	179	RIGHT	
THRU	0	0.0	(NO. OF LANES)			3.1		1307	THRU	STREET NAME: HAYES
RIGHT	0	0.0	1.0	3.0	0.0	1.1		2	LEFT	
			271	1729	0					SIG WARRANTS: Urb=Y, Rur=Y
			LEFT	THRU	RIGHT	Split? N				

N
W + E
S

STREET NAME: VAN NESS AVENUE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB THRU (T)	1729	1729	4950	0.3493	
LEFT (L)	271	271	1500	0.1807	0.1807
SB RIGHT (R)	65	65	1500	0.0433	
THRU (T)	1325	1325	4800	0.2760	
T + R		1390	4800	0.2896	0.2896
WB RIGHT (R)	179	99 *	1500	0.0660	
THRU (T)	1307	1307	4800	0.2723	
LEFT (L)	2	2	1500	0.0013	
T + L		1309	4800	0.2727	0.2727

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.74
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.84
INTERSECTION LEVEL OF SERVICE:	D

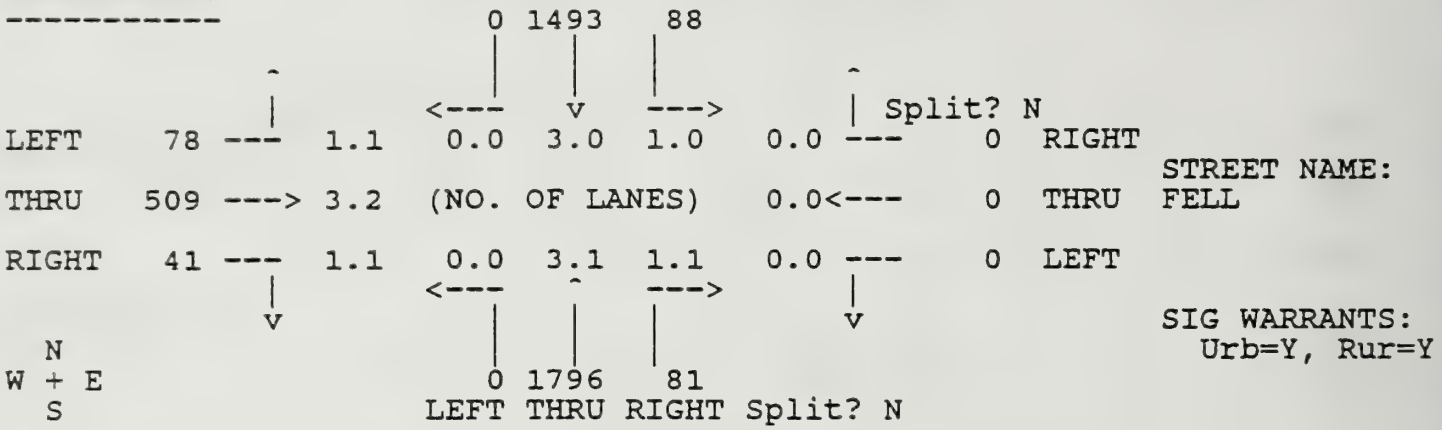
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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM EXISTING + PROJECT 03/21/94

INTERSECTION 2 VAN NESS AVENUE/FELL SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: VAN NESS AVENUE

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	81	81	1500	0.0540	
	THRU (T)	1796	1796	4800	0.3742	
	T + R		1877	4800	0.3910	0.3910
SB	THRU (T)	1493	1493	4950	0.3016	
	LEFT (L)	88	88	1500	0.0587	0.0587
EB	RIGHT (R)	41	41	1500	0.0273	
	THRU (T)	509	509	4650	0.1095	
	LEFT (L)	78	78	1500	0.0520	
	T + R		550	4650	0.1183	
	T + L		587	4650	0.1262	
	T + R + L		628	4650	0.1351	0.1351

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.58
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.68
INTERSECTION LEVEL OF SERVICE:	B

* ADJUSTED FOR RIGHT TURN ON RED

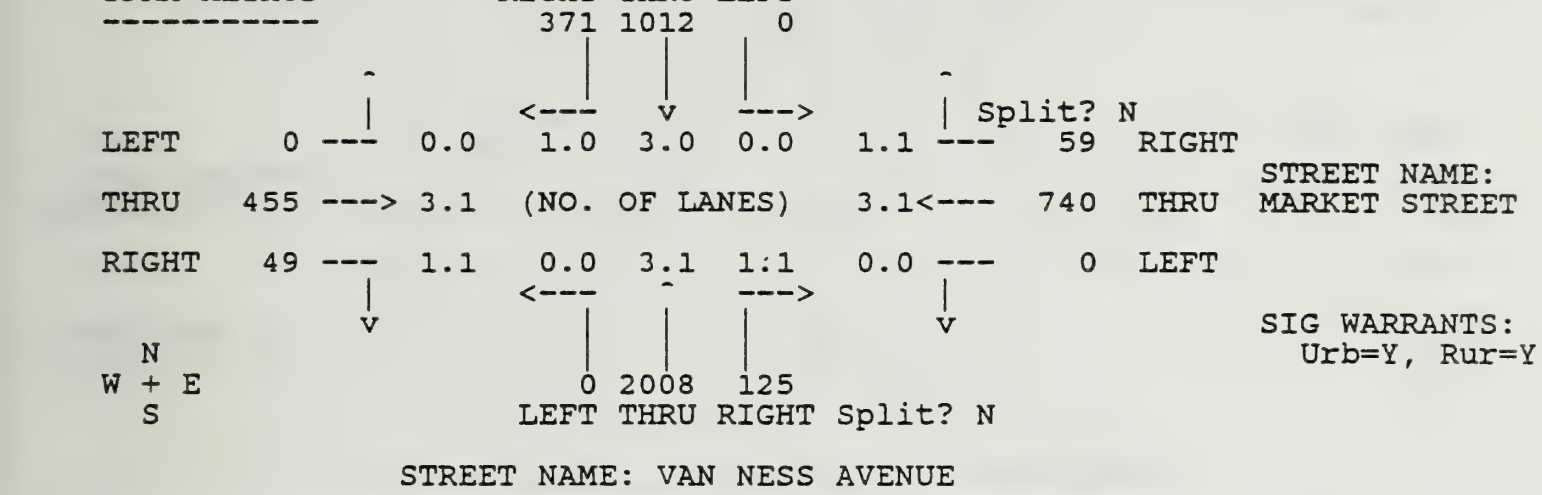
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Condition: PM EXISTING + PROJECT (preferred site) 04/05/94

INTERSECTION 3 VAN NESS AVENUE/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour 5:00-6:00

TJKM METHOD



STREET NAME: MARKET STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: VAN NESS AVENUE

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	125	125	1500	0.0833	
	THRU (T)	2008	2008	4800	0.4183	
	T + R		2133	4800	0.4444	0.4444
SB	RIGHT (R)	371	291 *	1500	0.1940	
	THRU (T)	1012	1012	4950	0.2044	
EB	RIGHT (R)	49	49	1500	0.0327	
	THRU (T)	455	455	4800	0.0948	
	T + R		504	4800	0.1050	
WB	RIGHT (R)	59	59	1500	0.0393	
	THRU (T)	740	740	4800	0.1542	
	T + R		799	4800	0.1665	0.1665

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.61
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.71
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

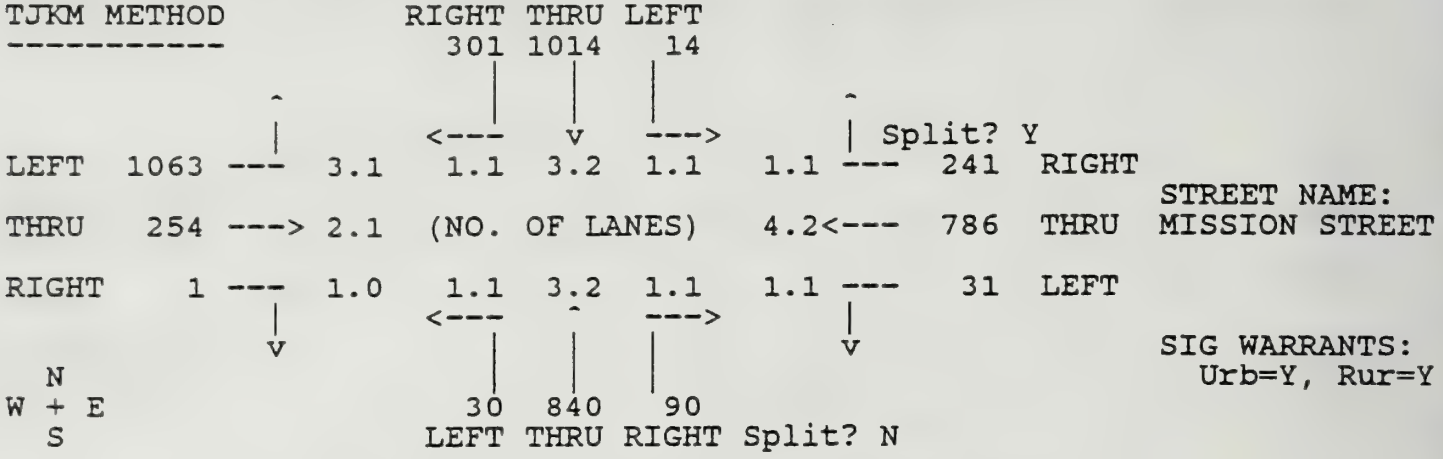
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Condition: PM EXISTING + PROJECT - PREFERRED SITE 03/23/94

INTERSECTION 4 S. VAN NESS/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: S. VAN NESS

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	90	90	1500	0.0600	
	THRU (T)	840	840	4650	0.1806	
	LEFT (L)	30	30	1500	0.0200	0.0200
	T + R		930	4650	0.2000	
	T + L		870	4650	0.1871	
	T + R + L		960	4650	0.2065	
SB	RIGHT (R)	301	301	1500	0.2007	
	THRU (T)	1014	1014	4650	0.2181	
	LEFT (L)	14	14	1500	0.0093	
	T + R		1315	4650	0.2828	
	T + L		1028	4650	0.2211	
	T + R + L		1329	4650	0.2858	0.2858
EB	RIGHT (R)	1	0 *	1500	0.0000	
	THRU (T)	254	254	3150	0.0806	
	LEFT (L)	1063	1063	3900	0.2726	0.2726
	T + L		1317	5550	0.2373	
WB	RIGHT (R)	241	241	1500	0.1607	
	THRU (T)	786	786	6300	0.1248	
	LEFT (L)	31	31	1500	0.0207	
	T + R		1027	6300	0.1630	
	T + L		817	6300	0.1297	
	T + R + L		1058	6300	0.1679	0.1679

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.75
ADJUSTMENT FOR LOST YELLOW TIME:	0.09
TOTAL VOLUME-TO-CAPACITY RATIO:	0.84
INTERSECTION LEVEL OF SERVICE:	D

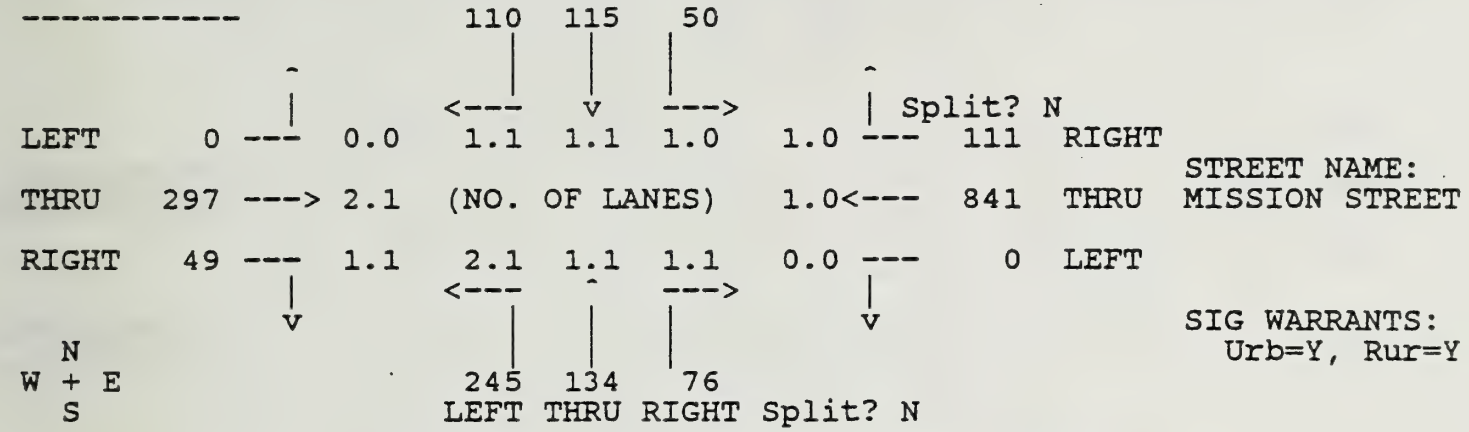
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Condition: PM EXISTING + PROEJCT - PREFERRED SITE 03/24/94

INTERSECTION 5 11TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour 4:45-5:45

TJKM METHOD



STREET NAME: 11TH STREET

MOVEMENT		ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	76	76	1500	0.0507	
	THRU (T)	134	134	1500	0.0893	
	LEFT (L)	245	245	2700	0.0907	0.0907
	T + R		210	1500	0.1400	
	T + L		379	2700	0.1404	
	T + R + L		455	2700	0.1685	
SB	RIGHT (R)	110	110	1500	0.0733	
	THRU (T)	115	115	1500	0.0767	
	LEFT (L)	50	50	1500	0.0333	
	T + R		225	1500	0.1500	0.1500
EB	RIGHT (R)	49	49	1500	0.0327	
	THRU (T)	297	297	3150	0.0943	
	T + R		346	3150	0.1098	
WB	RIGHT (R)	111	6 *	1500	0.0040	
	THRU (T)	841	841	1650	0.5097	0.5097

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.75
ADJUSTMENT FOR LOST YELLOW TIME:	0.09
TOTAL VOLUME-TO-CAPACITY RATIO:	0.84
INTERSECTION LEVEL OF SERVICE:	D

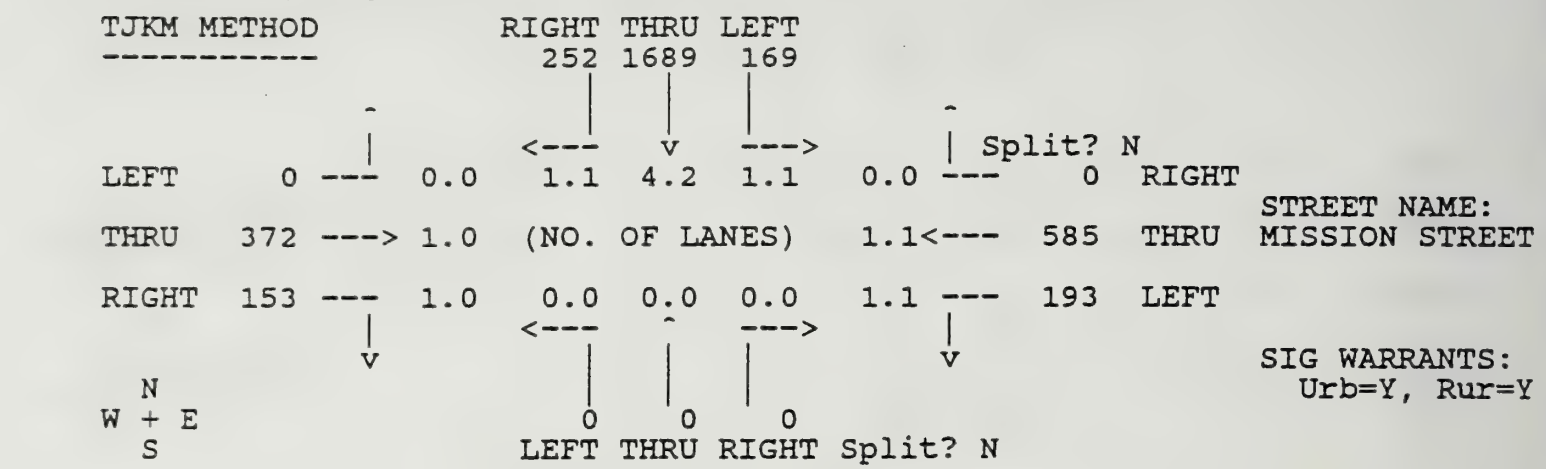
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Condition: PM EXISTING + PROJECT - PREFERRED SITE 03/23/94

INTERSECTION 6 10TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: 10TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	252	252	1500	0.1680	
THRU (T)	1689	1689	6300	0.2681	
LEFT (L)	169	169	1500	0.1127	
T + R		1941	6300	0.3081	
T + L		1858	6300	0.2949	
T + R + L		2110	6300	0.3349	0.3349
EB RIGHT (R)	153	73 *	1500	0.0487	
THRU (T)	372	372	1650	0.2255	
WB THRU (T)	585	585	1500	0.3900	
LEFT (L)	193	193	1500	0.1287	
T + L		778	1500	0.5187	0.5187

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.85
ADJUSTMENT FOR LOST YELLOW TIME:	0.04
TOTAL VOLUME-TO-CAPACITY RATIO:	0.89
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

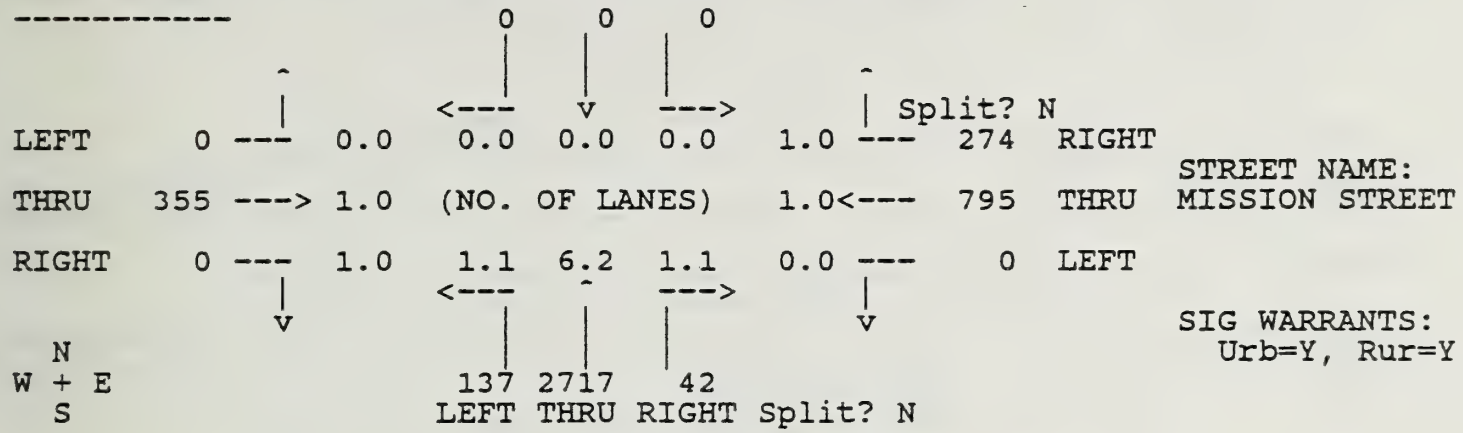
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Condition: PM EXISTING + PROJECT - PREFERRED SITE 03/23/94

INTERSECTION 7 9TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: MISSION STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: 9TH STREET

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	42	42	1500	0.0280	
	THRU (T)	2717	2717	9600	0.2830	
	LEFT (L)	137	137	1500	0.0913	
	T + R		2759	9600	0.2874	
	T + L		2854	9600	0.2973	
	T + R + L		2896	9600	0.3017	0.3017
EB	RIGHT (R)	0	0	1500	0.0000	
	THRU (T)	355	355	1650	0.2152	
WB	RIGHT (R)	274	194 *	1500	0.1293	
	THRU (T)	795	795	1650	0.4818	0.4818

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.78
ADJUSTMENT FOR LOST YELLOW TIME:	0.08
TOTAL VOLUME-TO-CAPACITY RATIO:	0.86
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

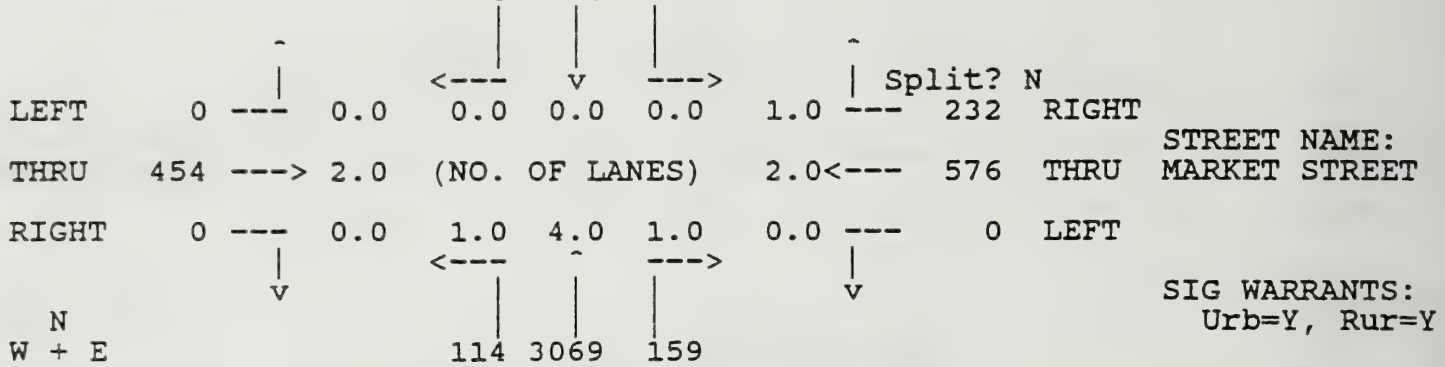
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Condition: PM EXISTING + PROJECT - PREFERRED SITE 03/21/94

INTERSECTION 14 9TH/LARKIN/HAYES/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD RIGHT THRU LEFT
0 0 0



STREET NAME: 9TH/LARKIN/HAYES

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*		CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	159	79	*	1500	0.0527	
	THRU -HAYES	1645	1645		3300	0.4985	0.4985
	THRU -LARKIN	1424	1424		3300	0.4315	
	LEFT (L)	114	114		1500	0.0760	
EB	THRU (T)	454	454		3300	0.1376	
WB	RIGHT (R)	232	152	*	1500	0.1013	
	THRU (T)	576	576		3300	0.1745	0.1745

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.67
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.77
INTERSECTION LEVEL OF SERVICE:	C

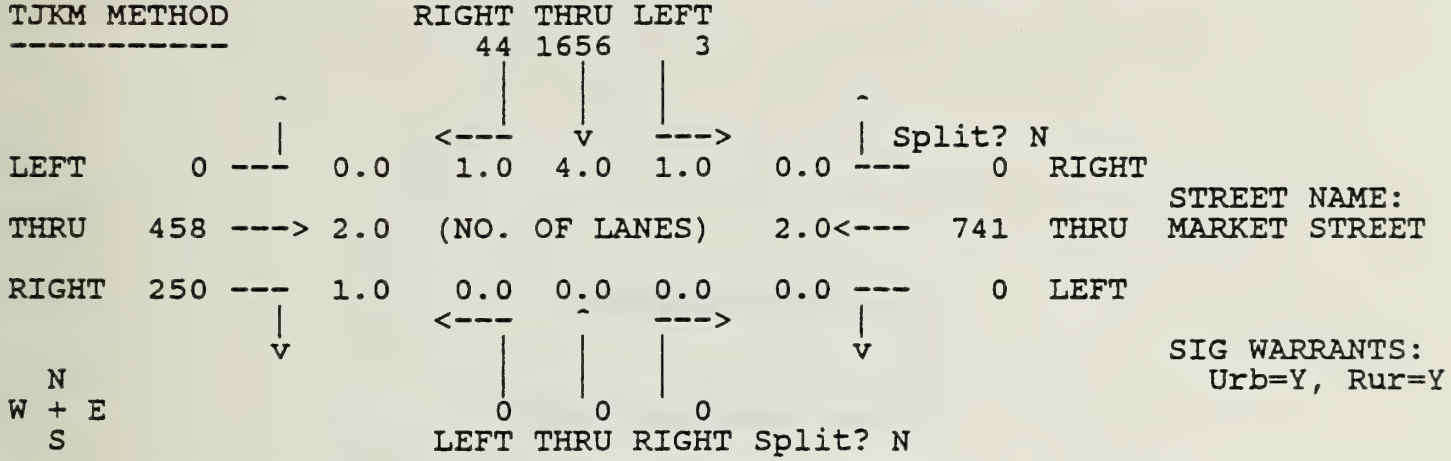
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Condition: PM EXISTING + PROJECT - PREFERRED SITE 03/21/94

INTERSECTION 15 10TH/POLK/FELL/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: 10TH/POLK/FELL

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*		CAPACITY	V/C RATIO	CRITICAL V/C
SB	RIGHT (R)	44	0	*	1500	0.0000	
	THRU -POLK	1152	1152		3300	0.3491	0.3491
	THRU -FELL	505	505		3300	0.1530	
	LEFT (L)	3	3		1500	0.0020	
EB	RIGHT (R)	250	170	*	1500	0.1133	
	THRU (T)	458	458		3300	0.1388	
WB	THRU (T)	741	741		3300	0.2245	0.2245

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.57
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.67
INTERSECTION LEVEL OF SERVICE:	B

* ADJUSTED FOR RIGHT TURN ON RED
INT=SANFRAN.INT,VOL=SFPRO.PMV+SFEXIST.PMV,CAP=LOSCAP.TAB

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PM PEAK HOUR

YEAR 2010 BASE CASE

(Without State Building and Project)

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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM PEAK HOUR - 2010 BASE (W/O STATE & PROJECT) 03/18/94

INTERSECTION 1 VAN NESS AVENUE/HAYES SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

```
                    RIGHT THRU LEFT
                       72 1467    0
                        |   |   |
                        |   |   |
                   <----    v   ---->
LEFT      0 ---  0.0    1.1  3.1  0.0   1.0 ---  198  RIGHT
                                                    STREET NAME:
THRU      0 ---> 0.0  (NO. OF LANES)    3.1<---  1444  THRU  HAYES

RIGHT     0 ---  0.0    1.0  3.0  0.0   1.1 ---    0  LEFT
                   <----    ^   ---->
                    |       |   |   |
                    v       |   |   v                  SIG WARRANTS:
  N                         |   |                        Urb=Y, Rur=Y
W + E                      292 1899    0
  S                    LEFT THRU RIGHT Split? N

                 STREET NAME: VAN NESS AVENUE
```

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB THRU (T)	1899	1899	4950	0.3836	
LEFT (L)	292	292	1500	0.1947	0.1947
SB RIGHT (R)	72	72	1500	0.0480	
THRU (T)	1467	1467	4800	0.3056	
T + R		1539	4800	0.3206	0.3206
WB RIGHT (R)	198	118 *	1500	0.0787	
THRU (T)	1444	1444	4800	0.3008	0.3008
LEFT (L)	0	0	1500	0.0000	
T + L		1444	4800	0.3008	

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.82
ADJUSTMENT FOR LOST YELLOW TIME:	0.06
TOTAL VOLUME-TO-CAPACITY RATIO:	0.88
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

INT=SANFRAN.INT,VOL=SF2010.PMV,CAP=LOSCAP.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM PEAK HOUR - 2010 BASE (W/O STATE & PROJECT) 03/18/94

INTERSECTION 2 VAN NESS AVENUE/FELL SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

			RIGHT	THRU	LEFT				
			0	1651	97				
LEFT	86	1.1	0.0	3.0	1.0	0.0	Split? N	0	RIGHT
THRU	563	3.2	(NO. OF LANES)			0.0		0	THRU
RIGHT	45	1.1	0.0	3.1	1.1	0.0		0	LEFT
			0	1965	90				
			LEFT	THRU	RIGHT	Split? N			

STREET NAME: FELL

STREET NAME: VAN NESS AVENUE

SIG WARRANTS: Urb=Y, Rur=Y

N
W + E
S

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	90	90	1500	0.0600	
	THRU (T)	1965	1965	4800	0.4094	
	T + R		2055	4800	0.4281	0.4281
SB	THRU (T)	1651	1651	4950	0.3335	
	LEFT (L)	97	97	1500	0.0647	0.0647
EB	RIGHT (R)	45	45	1500	0.0300	
	THRU (T)	563	563	4650	0.1211	
	LEFT (L)	86	86	1500	0.0573	
	T + R		608	4650	0.1308	
	T + L		649	4650	0.1396	
	T + R + L		694	4650	0.1492	0.1492

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.64
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.74
INTERSECTION LEVEL OF SERVICE:	C

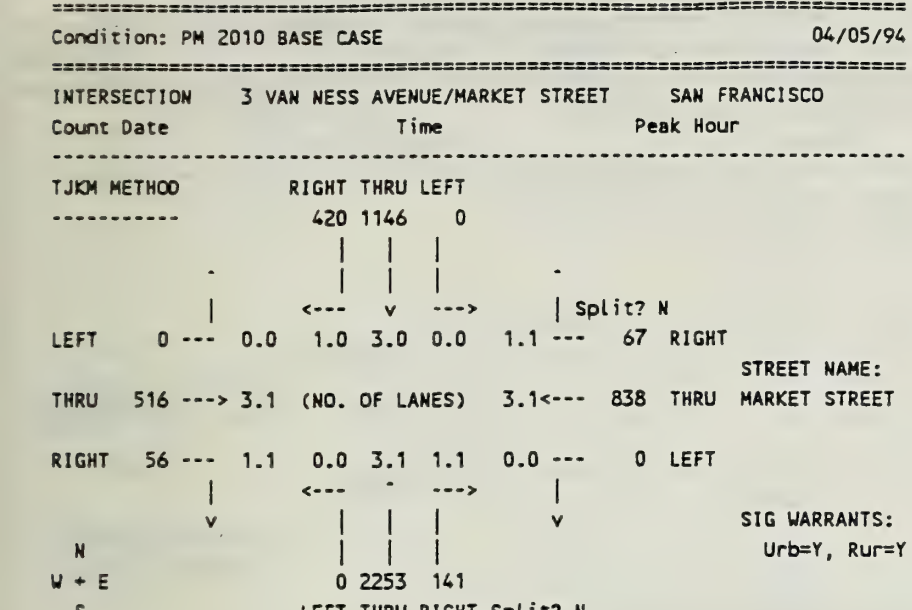
* ADJUSTED FOR RIGHT TURN ON RED

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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE 04/05/94

INTERSECTION 3 VAN NESS AVENUE/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour



STREET NAME: VAN NESS AVENUE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	141	141	1500	0.0940	
THRU (T)	2253	2253	4800	0.4694	
T + R		2394	4800	0.4988	0.4988
SB RIGHT (R)	420	340 *	1500	0.2267	
THRU (T)	1146	1146	4950	0.2315	
EB RIGHT (R)	56	56	1500	0.0373	
THRU (T)	516	516	4800	0.1075	
T + R		572	4800	0.1192	
WB RIGHT (R)	67	67	1500	0.0447	
THRU (T)	838	838	4800	0.1746	
T + R		905	4800	0.1885	0.1885

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.69
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.79
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

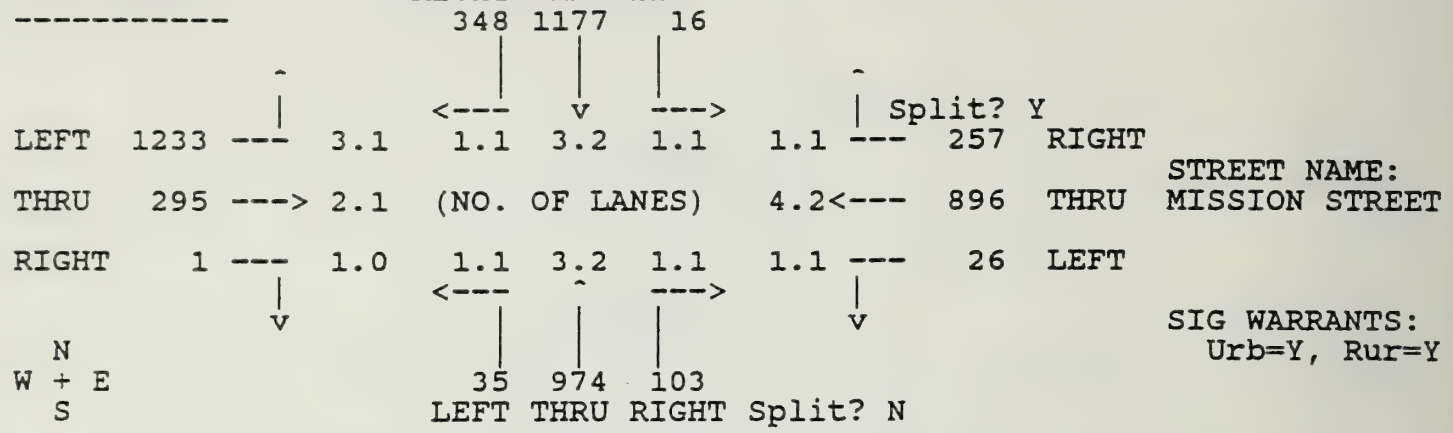
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Condition: PM PEAK HOUR - 2010 BASE (W/O STATE & PROJECT) 03/18/94

INTERSECTION 4 S. VAN NESS/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: MISSION STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: S. VAN NESS

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	103	103	1500	0.0687	
	THRU (T)	974	974	4650	0.2095	
	LEFT (L)	35	35	1500	0.0233	0.0233
	T + R		1077	4650	0.2316	
	T + L		1009	4650	0.2170	
	T + R + L		1112	4650	0.2391	
SB	RIGHT (R)	348	348	1500	0.2320	
	THRU (T)	1177	1177	4650	0.2531	
	LEFT (L)	16	16	1500	0.0107	
	T + R		1525	4650	0.3280	
	T + L		1193	4650	0.2566	
	T + R + L		1541	4650	0.3314	0.3314
EB	RIGHT (R)	1	0 *	1500	0.0000	
	THRU (T)	295	295	3150	0.0937	
	LEFT (L)	1233	1233	3900	0.3162	0.3162
	T + L		1528	5550	0.2753	
WB	RIGHT (R)	257	257	1500	0.1713	
	THRU (T)	896	896	6300	0.1422	
	LEFT (L)	26	26	1500	0.0173	
	T + R		1153	6300	0.1830	
	T + L		922	6300	0.1463	
	T + R + L		1179	6300	0.1871	0.1871

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.86
ADJUSTMENT FOR LOST YELLOW TIME:	0.04
TOTAL VOLUME-TO-CAPACITY RATIO:	0.90
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

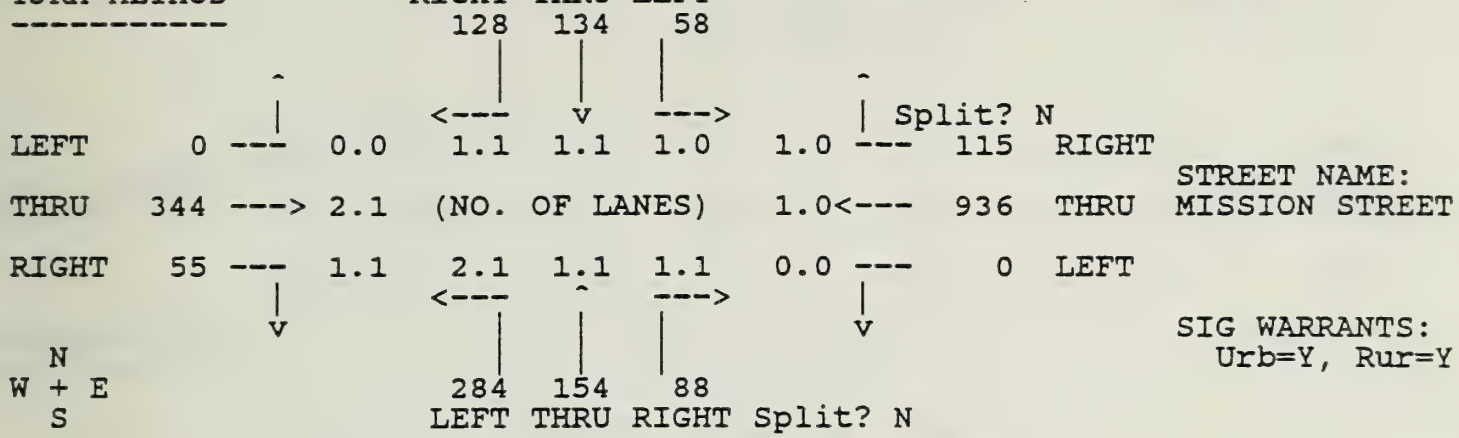
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Condition: PM 2010 BASE CASE 03/24/94

INTERSECTION 5 11TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: 11TH STREET

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	88	88	1500	0.0587	
	THRU (T)	154	154	1500	0.1027	
	LEFT (L)	284	284	2700	0.1052	0.1052
	T + R		242	1500	0.1613	
	T + L		438	2700	0.1622	
	T + R + L		526	2700	0.1948	
SB	RIGHT (R)	128	128	1500	0.0853	
	THRU (T)	134	134	1500	0.0893	
	LEFT (L)	58	58	1500	0.0387	
	T + R		262	1500	0.1747	0.1747
EB	RIGHT (R)	55	55	1500	0.0367	
	THRU (T)	344	344	3150	0.1092	
	T + R		399	3150	0.1267	
WB	RIGHT (R)	115	6 *	1500	0.0040	
	THRU (T)	936	936	1650	0.5673	0.5673

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.85
ADJUSTMENT FOR LOST YELLOW TIME:	0.04
TOTAL VOLUME-TO-CAPACITY RATIO:	0.89
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED
INT=SFDIAMON.INT,VOL=SF2010.PMV,CAP=LOSCAPSF.TAB

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Condition: PM 2010 BASE CASE WITH DIAMOND LANES 03/21/94

INTERSECTION 6 10TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

RIGHT THRU LEFT
243 1883 188

			<---	v	--->		Split? N		
LEFT	0	---	0.0	1.1	4.2	1.1	0.0	--- 0	RIGHT
THRU	431	--->	1.0	(NO. OF LANES)			1.1	<--- 675	THRU
RIGHT	178	---	1.0	0.0	0.0	0.0	1.1	--- 219	LEFT
				<---		--->			

STREET NAME: MISSION STREET

SIG WARRANTS: Urb=Y, Rur=Y

N
W + E
S

0 0 0
LEFT THRU RIGHT Split? N

STREET NAME: 10TH STREET

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB	RIGHT (R)	243	243	1500	0.1620	
	THRU (T)	1883	1883	6300	0.2989	
	LEFT (L)	188	188	1500	0.1253	
	T + R		2126	6300	0.3375	
	T + L		2071	6300	0.3287	
	T + R + L		2314	6300	0.3673	0.3673
EB	RIGHT (R)	178	98 *	1500	0.0653	
	THRU (T)	431	431	1650	0.2612	
WB	THRU (T)	675	675	1500	0.4500	
	LEFT (L)	219	219	1500	0.1460	
	T + L		894	1500	0.5960	0.5960

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.96
ADJUSTMENT FOR LOST YELLOW TIME:	0.00
TOTAL VOLUME-TO-CAPACITY RATIO:	0.96
INTERSECTION LEVEL OF SERVICE:	E

* ADJUSTED FOR RIGHT TURN ON RED
INT=SFDIAMON.INT,VOL=SF2010.PMV,CAP=LOSCAP.TAB

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Condition: PM 2010 BASE CASE (WITH DIAMOND LANES) 03/21/94

INTERSECTION 7 9TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

```
                          RIGHT THRU LEFT
                            0    0    0
                            |    |    |
                            |    |    |
                          <---   v   --->
LEFT      0 ---  0.0   0.0   0.0  0.0   1.0 ---  318  RIGHT
                                                      STREET NAME:
THRU    404 ---> 1.0  (NO. OF LANES)     1.0<---  920  THRU  MISSION STREET

RIGHT     0 ---  1.0   1.1   6.2  1.1   0.0 ---    0  LEFT
                |         <---   ^   --->      |
                v           |   |   |         v          SIG WARRANTS:
  N                         |   |   |                      Urb=Y, Rur=Y
W + E                     153 3139   39
  S                     LEFT THRU RIGHT Split? N

                  STREET NAME: 9TH STREET
```

MOVEMENT		ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	39	39	1500	0.0260	
	THRU (T)	3139	3139	9600	0.3270	
	LEFT (L)	153	153	1500	0.1020	
	T + R		3178	9600	0.3310	
	T + L		3292	9600	0.3429	
	T + R + L		3331	9600	0.3470	0.3470
EB	RIGHT (R)	0	0	1500	0.0000	
	THRU (T)	404	404	1650	0.2448	
WB	RIGHT (R)	318	238 *	1500	0.1587	
	THRU (T)	920	920	1650	0.5576	0.5576

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.90
ADJUSTMENT FOR LOST YELLOW TIME:	0.02
TOTAL VOLUME-TO-CAPACITY RATIO:	0.92
INTERSECTION LEVEL OF SERVICE:	E

* ADJUSTED FOR RIGHT TURN ON RED
INT=SFDIAMON.INT,VOL=SF2010.PMV,CAP=LOSCAPSF.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE 03/21/94

INTERSECTION 14 9TH/LARKIN/HAYES/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

			RIGHT	THRU	LEFT				
			0	0	0				
LEFT	0	0.0	0.0	0.0	0.0	1.0	252	RIGHT	Split? N
THRU	502	2.0	(NO. OF LANES)			2.0	653	THRU	STREET NAME: MARKET STREET
RIGHT	0	0.0	1.0	4.0	1.0	0.0	0	LEFT	

SIG WARRANTS: Urb=Y, Rur=Y

N
W + E
S

128 3461 156
LEFT THRU RIGHT Split? N

STREET NAME: 9TH/LARKIN/HAYES

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	156	76 *	1500	0.0507	
	THRU -HAYES	1853	1853	3300	0.5615	0.5615
	THRU -LARKIN	1608	1608	3300	0.4873	
	LEFT (L)	128	128	1500	0.0853	
EB	THRU (T)	502	502	3300	0.1521	
WB	RIGHT (R)	252	172 *	1500	0.1147	
	THRU (T)	653	653	3300	0.1979	0.1979

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.76
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.86
INTERSECTION LEVEL OF SERVICE:	D

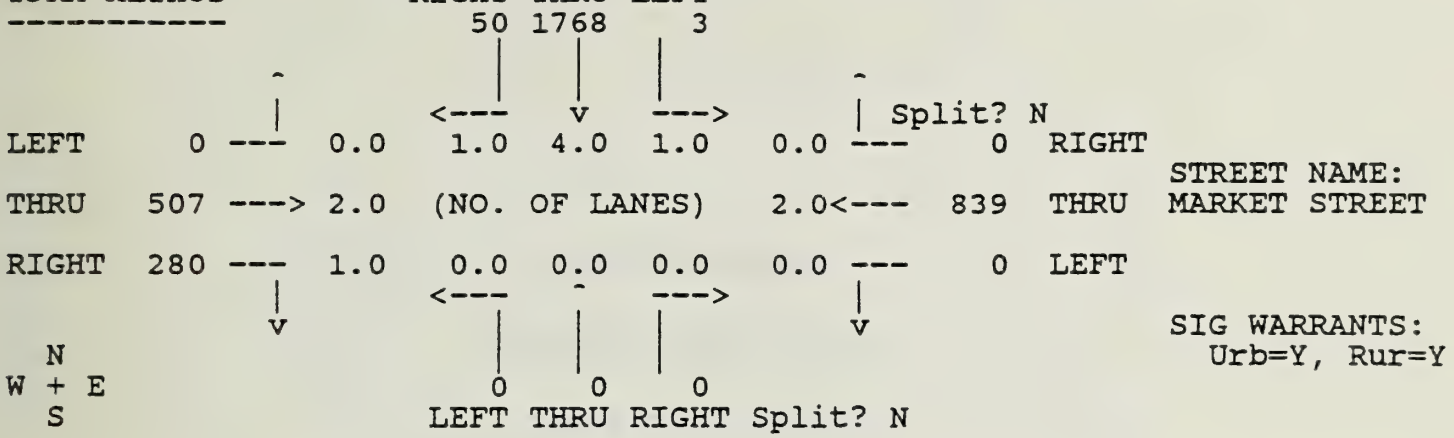
* ADJUSTED FOR RIGHT TURN ON RED
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Condition: PM 2010 BASE CASE 03/21/94

INTERSECTION 15 10TH/POLK/FELL/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: 10TH/POLK/FELL

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	50	0 *	1500	0.0000	
THRU -POLK	1196	1196	3300	0.3624	0.3624
THRU -FELL	571	571	3300	0.1730	
LEFT (L)	3	3	1500	0.0020	
EB RIGHT (R)	280	200 *	1500	0.1333	
THRU (T)	507	507	3300	0.1536	
WB THRU (T)	839	839	3300	0.2542	0.2542

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.62
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.72
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED
INT=SANFRAN.INT,VOL=SF2010.PMV,CAP=LOSCAP.TAB

PM PEAK HOUR

YEAR 2010 BASE CASE

(Plus State Building)

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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 1 VAN NESS AVENUE/HAYES SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD RIGHT THRU LEFT

72 1513 0

<--- v ---> Split? N

LEFT 0 --- 0.0 1.1 3.1 0.0 1.0 --- 198 RIGHT

STREET NAME:

THRU 0 ---> 0.0 (NO. OF LANES) 3.1<--- 1444 THRU HAYES

RIGHT 0 --- 0.0 1.0 3.0 0.0 1.1 --- 0 LEFT

<--- ---> SIG WARRANTS:

N Urb=Y, Rur=Y

W + E 292 1900 0

S LEFT THRU RIGHT Split? N

STREET NAME: VAN NESS AVENUE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB THRU (T)	1900	1900	4950	0.3838	
LEFT (L)	292	292	1500	0.1947	0.1947
SB RIGHT (R)	72	72	1500	0.0480	
THRU (T)	1513	1513	4800	0.3152	
T + R		1585	4800	0.3302	0.3302
WB RIGHT (R)	198	118 *	1500	0.0787	
THRU (T)	1444	1444	4800	0.3008	0.3008
LEFT (L)	0	0	1500	0.0000	
T + L		1444	4800	0.3008	

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.83
ADJUSTMENT FOR LOST YELLOW TIME:	0.05
TOTAL VOLUME-TO-CAPACITY RATIO:	0.88
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

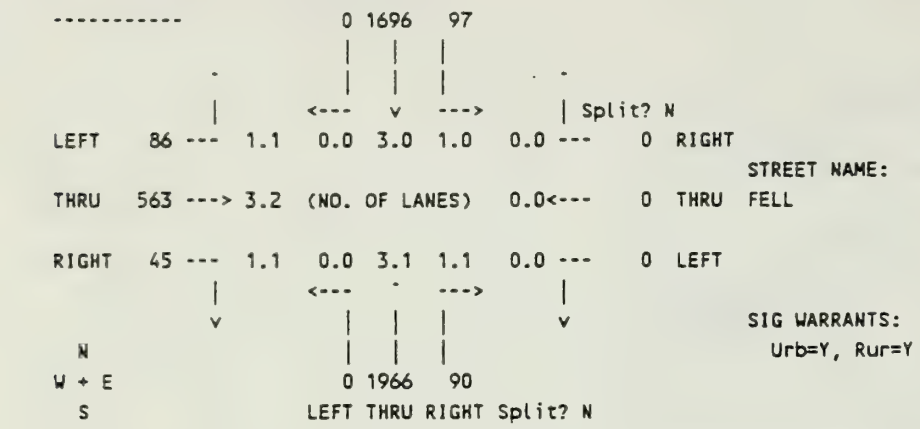
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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 2 VAN NESS AVENUE/FELL SAN FRANCISCO

Count Date Time Peak Hour



STREET NAME: VAN NESS AVENUE

MOVEMENT		ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	90	90	1500	0.0600	
	THRU (T)	1966	1966	4800	0.4096	
	T + R		2056	4800	0.4283	0.4283
SB	THRU (T)	1696	1696	4950	0.3426	
	LEFT (L)	97	97	1500	0.0647	0.0647
EB	RIGHT (R)	45	45	1500	0.0300	
	THRU (T)	563	563	4650	0.1211	
	LEFT (L)	86	86	1500	0.0573	
	T + R		608	4650	0.1308	
	T + L		649	4650	0.1396	
	T + R + L		694	4650	0.1492	0.1492

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.64
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.74
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

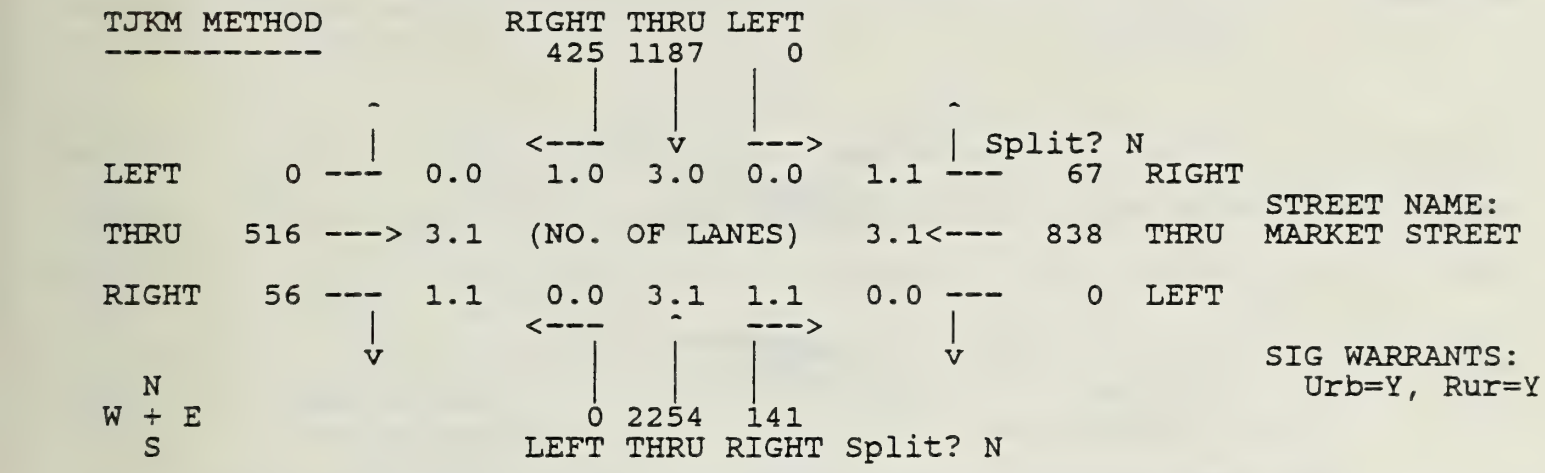
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Condition: PM 2010 BASE CASE + STATE BUILDING 04/05/94

INTERSECTION 3 VAN NESS AVENUE/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: VAN NESS AVENUE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	141	141	1500	0.0940	
THRU (T)	2254	2254	4800	0.4696	
T + R		2395	4800	0.4990	0.4990
SB RIGHT (R)	425	345 *	1500	0.2300	
THRU (T)	1187	1187	4950	0.2398	
EB RIGHT (R)	56	56	1500	0.0373	
THRU (T)	516	516	4800	0.1075	
T + R		572	4800	0.1192	
WB RIGHT (R)	67	67	1500	0.0447	
THRU (T)	838	838	4800	0.1746	
T + R		905	4800	0.1885	0.1885

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.69
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.79
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

INT=SANFRAN.INT,VOL=SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 4 S. VAN NESS/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

```
TJKM METHOD          RIGHT THRU LEFT
-----------            360 1206   16
                         |   |   |
                         |   |   |
                       <---  v  --->      | Split? Y
LEFT  1234 ---  3.1   1.1  3.2  1.1   1.1 ---  257  RIGHT
                                                  STREET NAME:
THRU   295 ---> 2.1  (NO. OF LANES)   4.2<---  896  THRU  MISSION STREET

RIGHT    1 ---  1.0   1.1  3.2  1.1   1.1 ---   26  LEFT
               |     <---   -   --->     |
               v        |   |   |        v            SIG WARRANTS:
  N            |        |   |   |                       Urb=Y, Rur=Y
W + E                  35  974  103
  S            LEFT THRU RIGHT Split? N
```

STREET NAME: S. VAN NESS

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	103	103	1500	0.0687	
THRU (T)	974	974	4650	0.2095	
LEFT (L)	35	35	1500	0.0233	0.0233
T + R		1077	4650	0.2316	
T + L		1009	4650	0.2170	
T + R + L		1112	4650	0.2391	
SB RIGHT (R)	360	360	1500	0.2400	
THRU (T)	1206	1206	4650	0.2594	
LEFT (L)	16	16	1500	0.0107	
T + R		1566	4650	0.3368	
T + L		1222	4650	0.2628	
T + R + L		1582	4650	0.3402	0.3402
EB RIGHT (R)	1	0 *	1500	0.0000	
THRU (T)	295	295	3150	0.0937	
LEFT (L)	1234	1234	3900	0.3164	0.3164
T + L		1529	5550	0.2755	
WB RIGHT (R)	257	257	1500	0.1713	
THRU (T)	896	896	6300	0.1422	
LEFT (L)	26	26	1500	0.0173	
T + R		1153	6300	0.1830	
T + L		922	6300	0.1463	
T + R + L		1179	6300	0.1871	0.1871

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.87
ADJUSTMENT FOR LOST YELLOW TIME:	0.03
TOTAL VOLUME-TO-CAPACITY RATIO:	0.90
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TAB

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Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 5 11TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

```
                    RIGHT THRU LEFT
                      128  134   58
                       |    |    |
                       |    |    |
                       |   <---  v  --->      | Split? N
LEFT     0 ---  0.0    1.1  1.1  1.0   1.0 ---  115  RIGHT
                                                      STREET NAME:
THRU   344 ---> 2.1  (NO. OF LANES)   1.0<---  936  THRU  MISSION STREET

RIGHT   55 ---  1.1    2.1  1.1  1.1   0.0 ---    0  LEFT
                |     <---   -   --->      |
                v       |    |    |        v              SIG WARRANTS:
  N                     |    |    |                         Urb=Y, Rur=Y
W + E                  284  154   88
  S                    LEFT THRU RIGHT Split? N
```

STREET NAME: 11TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	88	88	1500	0.0587	
THRU (T)	154	154	1500	0.1027	
LEFT (L)	284	284	2700	0.1052	0.1052
T + R		242	1500	0.1613	
T + L		438	2700	0.1622	
T + R + L		526	2700	0.1948	
SB RIGHT (R)	128	128	1500	0.0853	
THRU (T)	134	134	1500	0.0893	
LEFT (L)	58	58	1500	0.0387	
T + R		262	1500	0.1747	0.1747
EB RIGHT (R)	55	55	1500	0.0367	
THRU (T)	344	344	3150	0.1092	
T + R		399	3150	0.1267	
WB RIGHT (R)	115	6 *	1500	0.0040	
THRU (T)	936	936	1650	0.5673	0.5673

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.85
ADJUSTMENT FOR LOST YELLOW TIME:	0.04
TOTAL VOLUME-TO-CAPACITY RATIO:	0.89
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 6 10TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

```
TJKM METHOD          RIGHT THRU LEFT
-----------            243 1883  188
                         |   |   |
                         |   |   |
                 |       <---  v   --->      | Split? N
LEFT     0 ---  0.0   1.1  4.2  1.1   0.0 ---    0  RIGHT
                                                  STREET NAME:
THRU   431 ---> 1.0  (NO. OF LANES)   1.1<---  675  THRU  MISSION STREET

RIGHT  178 ---  1.0   0.0  0.0  0.0   1.1 ---  219  LEFT
               |       <---   -   --->      |
               v         |   |   |         v             SIG WARRANTS:
  N                      |   |   |                         Urb=Y, Rur=Y
W + E                    0   0   0
  S                  LEFT THRU RIGHT Split? N

               STREET NAME: 10TH STREET
```

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	243	243	1500	0.1620	
THRU (T)	1883	1883	6300	0.2989	
LEFT (L)	188	188	1500	0.1253	
T + R		2126	6300	0.3375	
T + L		2071	6300	0.3287	
T + R + L		2314	6300	0.3673	0.3673
EB RIGHT (R)	178	98 *	1500	0.0653	
THRU (T)	431	431	1650	0.2612	
WB THRU (T)	675	675	1500	0.4500	
LEFT (L)	219	219	1500	0.1460	
T + L		894	1500	0.5960	0.5960

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.96
ADJUSTMENT FOR LOST YELLOW TIME:	0.00
TOTAL VOLUME-TO-CAPACITY RATIO:	0.96
INTERSECTION LEVEL OF SERVICE:	E

* ADJUSTED FOR RIGHT TURN ON RED

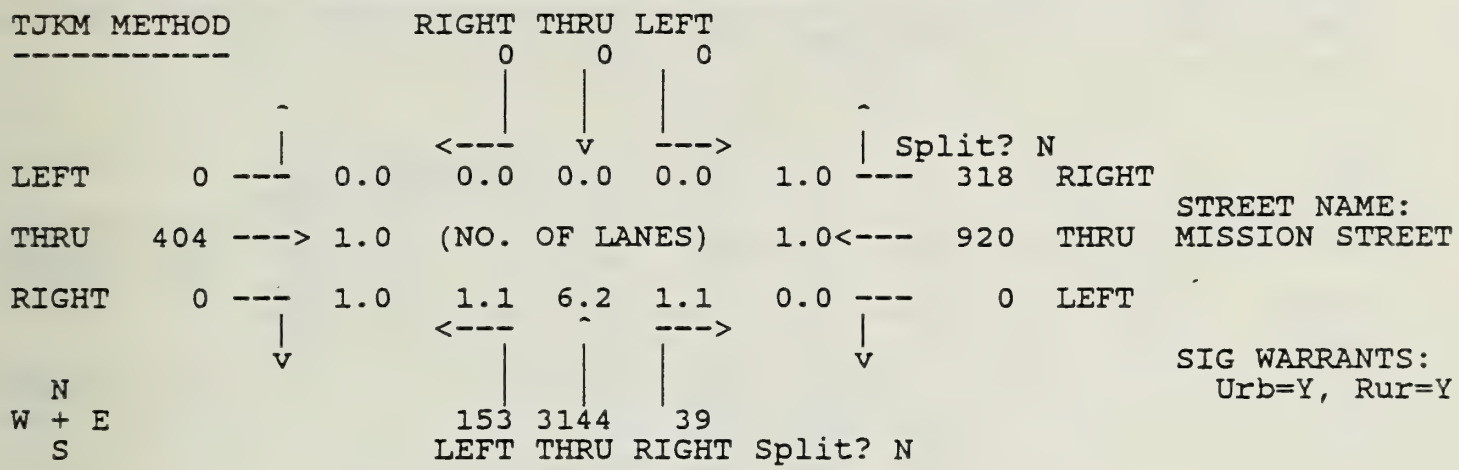
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Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 7 9TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: MISSION STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: 9TH STREET

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	39	39	1500	0.0260	
	THRU (T)	3144	3144	9600	0.3275	
	LEFT (L)	153	153	1500	0.1020	
	T + R		3183	9600	0.3316	
	T + L		3297	9600	0.3434	
	T + R + L		3336	9600	0.3475	0.3475
EB	RIGHT (R)	0	0	1500	0.0000	
	THRU (T)	404	404	1650	0.2448	
WB	RIGHT (R)	318	238 *	1500	0.1587	
	THRU (T)	920	920	1650	0.5576	0.5576

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.91
ADJUSTMENT FOR LOST YELLOW TIME:	0.01
TOTAL VOLUME-TO-CAPACITY RATIO:	0.92
INTERSECTION LEVEL OF SERVICE:	E

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=STATEBLD.PMV+SF2010.PMV,CAP=LOSCAPSF.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 14 9TH/LARKIN/HAYES/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD RIGHT THRU LEFT
0 0 0

STREET NAME: 9TH/LARKIN/HAYES

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	156	76 *	1500	0.0507	
THRU -HAYES	1853	1853	3300	0.5615	0.5615
THRU -LARKIN	1612	1612	3300	0.4885	
LEFT (L)	128	128	1500	0.0853	
EB THRU (T)	502	502	3300	0.1521	
WB RIGHT (R)	252	172 *	1500	0.1147	
THRU (T)	653	653	3300	0.1979	0.1979

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.76
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.86
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED
INT=SFDIAMON.INT,VOL=STATEBLD.PMV+SF2010.PMV,CAP=LOSCAPSF.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 15 10TH/POLK/FELL/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

```
                    RIGHT THRU LEFT
                       50 1769    3
                        |   |   |
                        |   |   |
                    <---    v   --->
LEFT      0 ---  0.0    1.0   4.0   1.0   0.0 ---     0  RIGHT
                                                  STREET NAME:
THRU    507 ---> 2.0  (NO. OF LANES)    2.0<---   839  THRU  MARKET STREET

RIGHT   280 ---  1.0    0.0   0.0   0.0   0.0 ---     0  LEFT
                    <---    ^   --->       |
                  v         |   |          v          SIG WARRANTS:
  N                         |   |                       Urb=Y, Rur=Y
W + E                       0   0   0
  S                  LEFT THRU RIGHT Split? N
```

STREET NAME: 10TH/POLK/FELL

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	50	0 *	1500	0.0000	
THRU -POLK	1196	1769	3300	0.3624	0.3624
THRU -FELL	572	572	3300	0.1730	
LEFT (L)	3	3	1500	0.0020	
EB RIGHT (R)	280	200 *	1500	0.1333	
THRU (T)	507	507	3300	0.1536	
WB THRU (T)	839	839	3300	0.2542	0.2542

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.62
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.72
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=STATEBLD.PMV+SF2010.PMV,CAP=LOSCAPSF.TAB

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PM PEAK HOUR

YEAR 2010 BASE CASE

(Plus State Building Plus Project)

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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING + PROJECT 04/04/94

INTERSECTION 1 VAN NESS AVENUE/HAYES SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD RIGHT THRU LEFT
72 1513 0

STREET NAME: VAN NESS AVENUE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB THRU (T)	1914	1914	4950	0.3867	
LEFT (L)	299	299	1500	0.1993	0.1993
SB RIGHT (R)	72	72	1500	0.0480	
THRU (T)	1513	1513	4800	0.3152	
T + R		1585	4800	0.3302	0.3302
WB RIGHT (R)	198	118 *	1500	0.0787	
THRU (T)	1447	1447	4800	0.3015	
LEFT (L)	2	2	1500	0.0013	
T + L		1449	4800	0.3019	0.3019

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION: 0.83
ADJUSTMENT FOR LOST YELLOW TIME: 0.05
TOTAL VOLUME-TO-CAPACITY RATIO: 0.88
INTERSECTION LEVEL OF SERVICE: D

* ADJUSTED FOR RIGHT TURN ON RED

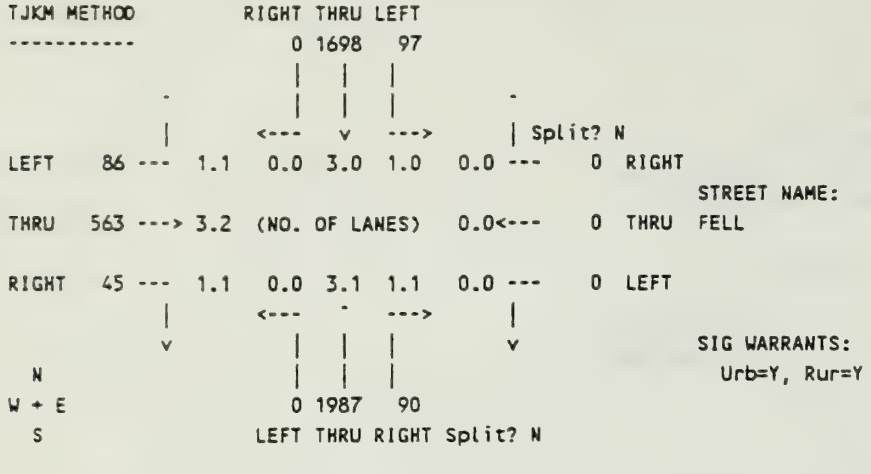
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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING + PROJECT 04/04/94

INTERSECTION 2 VAN NESS AVENUE/FELL SAN FRANCISCO

Count Date Time Peak Hour



STREET NAME: VAN NESS AVENUE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	90	90	1500	0.0600	
THRU (T)	1987	1987	4800	0.4140	
T + R		2077	4800	0.4327	0.4327
SB THRU (T)	1698	1698	4950	0.3430	
LEFT (L)	97	97	1500	0.0647	0.0647
EB RIGHT (R)	45	45	1500	0.0300	
THRU (T)	563	563	4650	0.1211	
LEFT (L)	86	86	1500	0.0573	
T + R		608	4650	0.1308	
T + L		649	4650	0.1396	
T + R + L		694	4650	0.1492	0.1492

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.65
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.75
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

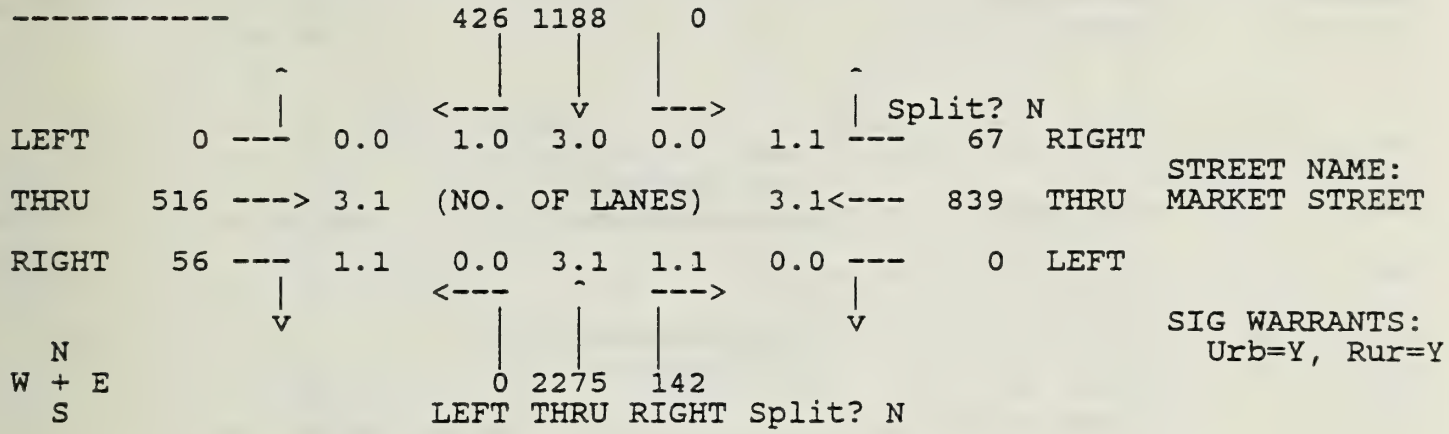
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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 + STATE BUILDING + PROJECT (preferred) 04/05/94

INTERSECTION 3 VAN NESS AVENUE/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: VAN NESS AVENUE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	142	142	1500	0.0947	
THRU (T)	2275	2275	4800	0.4740	
T + R		2417	4800	0.5035	0.5035
SB RIGHT (R)	426	346 *	1500	0.2307	
THRU (T)	1188	1188	4950	0.2400	
EB RIGHT (R)	56	56	1500	0.0373	
THRU (T)	516	516	4800	0.1075	
T + R		572	4800	0.1192	
WB RIGHT (R)	67	67	1500	0.0447	
THRU (T)	839	839	4800	0.1748	
T + R		906	4800	0.1888	0.1888

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.69
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.79
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

INT=SANFRAN.INT,VOL=SF2010.PMV+STATEBLD.PMV+SFPRO.PMV,CAP=LOSCAPSF.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING + PROJECT 04/04/94

INTERSECTION 4 S. VAN NESS/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

```
TJKM METHOD          RIGHT THRU LEFT
-----------            361 1206   16
                         |   |   |
                         |   |   |
                         |   |   |
                        <---  v  --->        | Split? Y
LEFT  1235 ---  3.1   1.1  3.2  1.1   1.1 ---  277  RIGHT
                                                    STREET NAME:
THRU   295 ---> 2.1  (NO. OF LANES)   4.2<---  910  THRU  MISSION STREET

RIGHT    1 ---  1.0   1.1  3.2  1.1   1.1 ---   35  LEFT
               |       <---   .   --->      |
               v         |   |   |         v            SIG WARRANTS:
  N                      |   |   |                        Urb=Y, Rur=Y
W + E                   35  975  104
  S                   LEFT THRU RIGHT Split? N
```

STREET NAME: S. VAN NESS

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	104	104	1500	0.0693	
THRU (T)	975	975	4650	0.2097	
LEFT (L)	35	35	1500	0.0233	0.0233
T + R		1079	4650	0.2320	
T + L		1010	4650	0.2172	
T + R + L		1114	4650	0.2396	
SB RIGHT (R)	361	361	1500	0.2407	
THRU (T)	1206	1206	4650	0.2594	
LEFT (L)	16	16	1500	0.0107	
T + R		1567	4650	0.3370	
T + L		1222	4650	0.2628	
T + R + L		1583	4650	0.3404	0.3404
EB RIGHT (R)	1	0 *	1500	0.0000	
THRU (T)	295	295	3150	0.0937	
LEFT (L)	1235	1235	3900	0.3167	0.3167
T + L		1530	5550	0.2757	
WB RIGHT (R)	277	277	1500	0.1847	
THRU (T)	910	910	6300	0.1444	
LEFT (L)	35	35	1500	0.0233	
T + R		1187	6300	0.1884	
T + L		945	6300	0.1500	
T + R + L		1222	6300	0.1940	0.1940

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.87
ADJUSTMENT FOR LOST YELLOW TIME:	0.03
TOTAL VOLUME-TO-CAPACITY RATIO:	0.90
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SFPRO.PMV+SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TA

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Condition: PM 2010 BASE CASE + STATE BUILDING + PROJECT 04/04/94

INTERSECTION 5 11TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

```
TJKM METHOD          RIGHT THRU LEFT
-----------            128  134   58
                         |   |   |
             -           |   |   |          -
             |       <---   v   --->       | Split? N
LEFT     0 ---  0.0   1.1  1.1  1.0   1.0 ---  127  RIGHT
                                                    STREET NAME:
THRU   345 ---> 2.1  (NO. OF LANES)   1.0<---  971  THRU  MISSION STREET

RIGHT   57 ---  1.1   2.1  1.1  1.1   0.0 ---    0  LEFT
             |       <---   -   --->       |
             v         |   |   |          v              SIG WARRANTS:
  N                    |   |   |                           Urb=Y, Rur=Y
W + E                 284  155   88
  S                   LEFT THRU RIGHT Split? N
```

STREET NAME: 11TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	88	88	1500	0.0587	
THRU (T)	155	155	1500	0.1033	
LEFT (L)	284	284	2700	0.1052	0.1052
T + R		243	1500	0.1620	
T + L		439	2700	0.1626	
T + R + L		527	2700	0.1952	
SB RIGHT (R)	128	128	1500	0.0853	
THRU (T)	134	134	1500	0.0893	
LEFT (L)	58	58	1500	0.0387	
T + R		262	1500	0.1747	0.1747
EB RIGHT (R)	57	57	1500	0.0380	
THRU (T)	345	345	3150	0.1095	
T + R		402	3150	0.1276	
WB RIGHT (R)	127	18 *	1500	0.0120	
THRU (T)	971	971	1650	0.5885	0.5885

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.87
ADJUSTMENT FOR LOST YELLOW TIME:	0.03
TOTAL VOLUME-TO-CAPACITY RATIO:	0.90
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SFPRO.PMV+SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TA

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING + PROJECT 04/04/94

INTERSECTION 6 10TH STREET/MISSION STREET SAN FRANCISCO

Count Date Time Peak Hour

TJKM METHOD

```
           RIGHT THRU LEFT
           286  1950  195
             |    |    |
             |    |    |
        <--- v    v ---> | Split? N
LEFT   0 --- 0.0  1.1  4.2  1.1  0.0 ---   0  RIGHT
                                              STREET NAME:
THRU 432 ---> 1.0 (NO. OF LANES)   1.1<---  679  THRU  MISSION STREET

RIGHT 178 --- 1.0  0.0  0.0  0.0  1.1 ---  223  LEFT
        |    <---  ^   --->   |
        v         |    |      v              SIG WARRANTS:
  N               |    |                       Urb=Y, Rur=Y
W + E             0    0    0
  S           LEFT THRU RIGHT Split? N
```

STREET NAME: 10TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	286	286	1500	0.1907	
THRU (T)	1950	1950	6300	0.3095	
LEFT (L)	195	195	1500	0.1300	
T + R		2236	6300	0.3549	
T + L		2145	6300	0.3405	
T + R + L		2431	6300	0.3859	0.3859
EB RIGHT (R)	178	98 *	1500	0.0653	
THRU (T)	432	432	1650	0.2618	
WB THRU (T)	679	679	1500	0.4527	
LEFT (L)	223	223	1500	0.1487	
T + L		902	1500	0.6013	0.6013

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.99
ADJUSTMENT FOR LOST YELLOW TIME:	0.00
TOTAL VOLUME-TO-CAPACITY RATIO:	0.99
INTERSECTION LEVEL OF SERVICE:	E

* ADJUSTED FOR RIGHT TURN ON RED

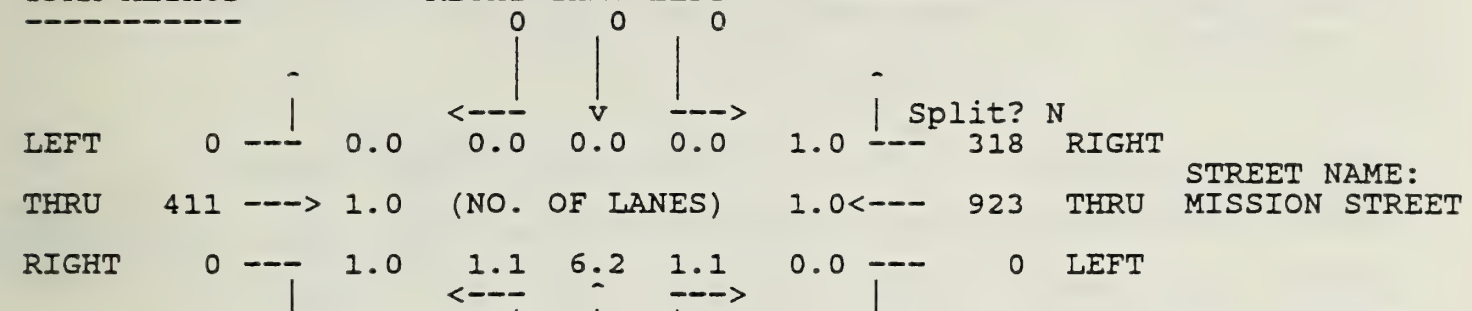
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Condition: PM 2010 BASE CASE + STATE BUILDING + PROJECT 04/04/94

INTERSECTION 7 9TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD RIGHT THRU LEFT
0 0 0



STREET NAME: 9TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	47	47	1500	0.0313	
THRU (T)	3157	3157	9600	0.3289	
LEFT (L)	158	158	1500	0.1053	
T + R		3204	9600	0.3337	
T + L		3315	9600	0.3453	
T + R + L		3362	9600	0.3502	0.3502
EB RIGHT (R)	0	0	1500	0.0000	
THRU (T)	411	411	1650	0.2491	
WB RIGHT (R)	318	238 *	1500	0.1587	
THRU (T)	923	923	1650	0.5594	0.5594

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.91
ADJUSTMENT FOR LOST YELLOW TIME:	0.01
TOTAL VOLUME-TO-CAPACITY RATIO:	0.92
INTERSECTION LEVEL OF SERVICE:	E

* ADJUSTED FOR RIGHT TURN ON RED
INT=SFDIAMON.INT,VOL=SFPRO.PMV+SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TA

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Condition: PM 2010 BASE CASE + STATE BUILDING + PROJECT 04/04/94

INTERSECTION 14 9TH/LARKIN/HAYES/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

			RIGHT	THRU	LEFT					
			0	0	0					
			<---	v	--->		Split? N			
LEFT	0	--- 0.0	0.0	0.0	0.0	1.0	---	262	RIGHT	
										STREET NAME:
THRU	513	---> 2.0	(NO. OF LANES)			2.0	<---	653	THRU	MARKET STREET
RIGHT	0	--- 0.0	1.0	4.0	1.0	0.0	---	0	LEFT	
			<---		--->					
		v				v				SIG WARRANTS:
N										Urb=Y, Rur=Y
W + E			129	3482	177					
S			LEFT	THRU	RIGHT	Split? N				

STREET NAME: 9TH/LARKIN/HAYES

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*		CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	177	97	*	1500	0.0647	
THRU -HAYES	1864	1864		3300	0.5648	0.5648
THRU-LARKIN	1618	1618		3300	0.4903	
LEFT (L)	129	129		1500	0.0860	
EB THRU (T)	513	513		3300	0.1555	
WB RIGHT (R)	262	182	*	1500	0.1213	
THRU (T)	653	653		3300	0.1979	0.1979

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.76
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.86
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SFPRO.PMV+SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TA

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Condition: PM 2010 BASE CASE + STATE BUILDING + PROJECT 04/04/94

INTERSECTION 15 10TH/POLK/FELL/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

```
                        RIGHT THRU LEFT
                          50 1866    3
                           |    |    |
                           |    |    |
                    <---   v    --->       |
LEFT      0 ---  0.0   1.0  4.0  1.0   0.0 ---    0  RIGHT
                                                    STREET NAME:
THRU    518 ---> 2.0  (NO. OF LANES)    2.0<---  840  THRU  MARKET STREET

RIGHT   283 ---  1.0   0.0  0.0  0.0   0.0 ---    0  LEFT
                |     <---   ^   --->       |
                v          |    |          v          SIG WARRANTS:
  N                        |    |                       Urb=Y, Rur=Y
W + E                      0    0    0
  S                  LEFT THRU RIGHT Split? N
```

STREET NAME: 10TH/POLK/FELL

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	50	0 *	1500	0.0000	
THRU -POLK	1293	1293	3300	0.3918	0.3918
THRU -FELL	572	573	3300	0.1736	
LEFT (L)	3	3	1500	0.0020	
EB RIGHT (R)	283	203 *	1500	0.1353	
THRU (T)	518	518	3300	0.1570	
WB THRU (T)	840	840	3300	0.2545	0.2545

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.65
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.75
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SFPRO.PMV+SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TA

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APPENDIX C

PERSON-TRIP COUNTS AND TRIP RATE CALCULATIONS

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SUMMARY - PERSON-TRIP COUNTS AND TRIP RATE CALCULATIONS
OAKLAND FEDERAL BUILDING - FEBRUARY 17, 1994

Time Period	person trips - walk through main doors			person trips through side doors via card			person trips - through garage			total person trips			Oakland Federal Building Person-trip rate per:	
	in	out	total	in	out	total	in	out	total	in	out	total	1000 gsf	employee
am 7:15-8:15	757	50	807	78	15	93	18	3	21	853	68	921	1.41	0.33
12:00 - 1:00 p.m.	627	561	1,188	43	65	108	7	7	14	677	633	1,310	2.01	0.46
pm 4:15-5:15	125	710	835	7	100	107	3	20	23	135	830	965	1.48	0.34
daily total	4,405	3,826	8,231	411	990	1,401	148	148	296	4,964	4,964	9,928	15.21	3.51

assumptions: 652.8 1000 gross square feet and 2826 employees

SAN FRANCISCO FEDERAL BUILDING MODE SPLIT AND DISTRIBUTION

WORK TRIP DISTRIBUTION PERCENTAGES

LOCATION	DISTR. %	DRIVE ALONE	CAR/VA POOL %	MUNI %	BART %	CALTRAIN %	AC %	SAMTRA %	GG %	FERRY %	CHART %	WALK %	OTHE %	TOTAL %
NE SF	10	6.0	3.0	42.0	1.0							47.0	1.0	100
NW SF	17	23.0	11.0	64.0									2.0	100
SE SF	8	28.0	11.0	33.0	19.0								9.0	100
SW SF	17	17.0	14.0	60.0	8.0								1.0	100
NORTH BAY	11	28.0	15.0						41.0	12.0	4.0			100
EAST BAY	27	6.0	14.0		56.0		****			1.0	1.0			100
PENINSULA	5	23.0	25.0	2.0	25.0	15.0		9.0					1.0	100
C-3	4	2.0	0.0	40.0	1.0							55.0	2.0	100
TOTAL	100													

NON-WORK TRIP DISTRIBUTION PERCENTAGES

LOCATION	DISTR. %	DRIVE ALONE	CAR/VA POOL %	MUNI %	BART %	CALTRAIN %	AC %	SAMTRA %	GG %	FERRY %	CHART %	WALK %	OTHE %	TOTAL %
NE SF	1	8.9	8.5	13.1	0.3							68.1	1.1	100
NW SF	1	22.4	30.0	34.1	0.2							10.4	2.9	100
SE SF	2	29.4	30.0	21.2	15.3							2.0	2.1	100
SW SF	2	20.7	32.2	40.4	5.0								1.7	100
NORTH BAY	3	54.0	22.2						20.0	3.8				100
EAST BAY	6	44.0	17.5		24.3		****							100
PENINSULA	2	45.5	27.5	3.0	9.0	9.1		5.0					0.9	100
C-3	83	8.9	8.5	13.1	0.3							68.1	1.1	100
TOTAL	100													

WORK TRIP PERSON-TRIP-ENDS

LOCATION	TOTAL PTE	SOV PTE	CAR/VA PTE	MUNI PTE	BART PTE	CALTRAIN PTE	AC PTE	SAMTRA PTE	GG PTE	FERRY PTE	CHART PTE	WALK PTE	OTHE PTE	TOTAL VTE
NE SF	85	5	3	36	1	0	0	0	0	0	0	40	1	6
NW SF	144	33	16	92	0	0	0	0	0	0	0	0	3	40
SE SF	68	19	7	22	13	0	0	0	0	0	0	0	6	22
SW SF	144	24	20	86	12	0	0	0	0	0	0	0	1	34
NORTH BAY	93	26	14	0	0	0	0	0	38	11	4	0	0	32
EAST BAY	229	14	32	0	128	0	50	0	0	2	2	0	0	28
PENINSULA	51	12	13	1	13	8	0	5	0	0	0	0	1	17
C-3	34	1	0	14	0	0	0	0	0	0	0	19	1	1
TOTAL	847	134	105	251	166	8	50	5	38	13	6	58	12	181

NON- WORK TRIP PERSON-TRIP-ENDS

LOCATION	TOTAL PTE	SOV PTE	CAR/VA PTE	MUNI PTE	BART PTE	CALTRAIN PTE	AC PTE	SAMTRA PTE	GG PTE	FERRY PTE	CHART PTE	WALK PTE	OTHE PTE	TOTAL VTE
NE SF	2	0	0	0	0	0	0	0	0	0	0	1	0	0
NW SF	2	0	0	1	0	0	0	0	0	0	0	0	0	0
SE SF	3	1	0	1	1	0	0	0	0	0	0	0	0	1
SW SF	3	1	0	1	0	0	0	0	0	0	0	0	0	1
NORTH BAY	5	3	0	0	0	0	0	0	1	0	0	0	0	3
EAST BAY	10	5	0	0	3	0	1	0	0	0	0	0	0	5
PENINSULA	3	2	0	0	0	0	0	0	0	0	0	0	0	2
C-3	144	13	0	19	0	0	0	0	0	0	0	98	2	13
TOTAL	173	24	0	22	4	0	1	0	1	0	0	99	2	24

assumes avg carpool/vanpool occupancy of 2.2 persons per vehicle

APPENDIX D

LOS WORKSHEETS - ALTERNATIVE SITE

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PM PEAK HOUR

ALTERNATIVE SITE - EXISTING CONDITIONS

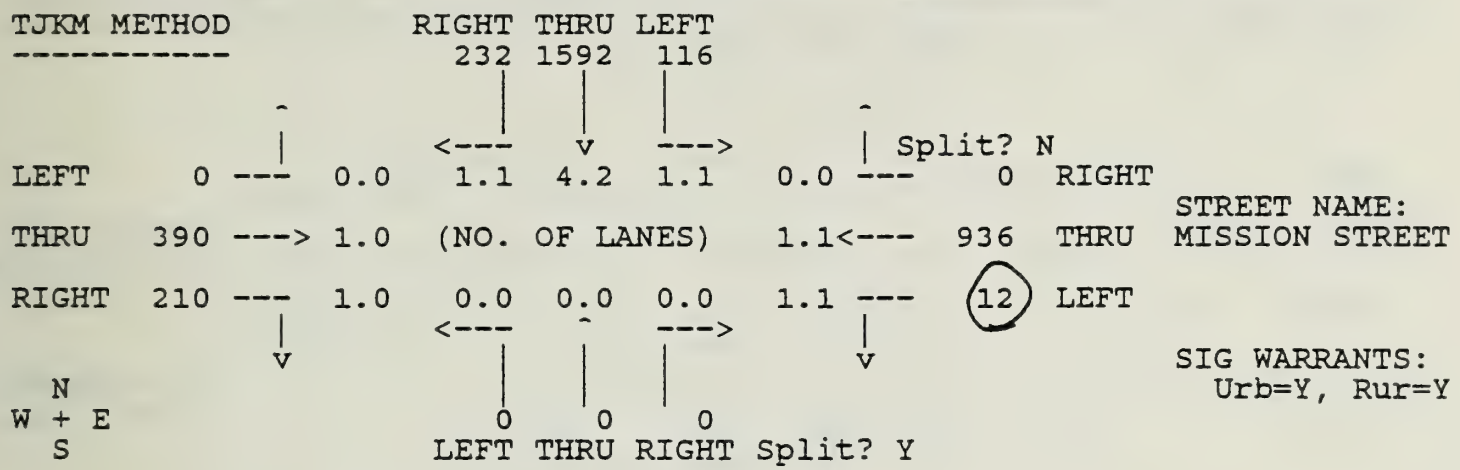
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Condition: PM PEAK HOUR -EXISTING CONDITIONS -DIAMOND LNS 03/07/94

INTERSECTION 8 8TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time 4:30-5:30 Peak Hour 4:30-5:30

TJKM METHOD



STREET NAME: 8TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	232	232	1500	0.1547	
THRU (T)	1592	1592	6300	0.2527	
LEFT (L)	116	116	1500	0.0773	
T + R		1824	6300	0.2895	
T + L		1708	6300	0.2711	
T + R + L		1940	6300	0.3079	0.3079
EB RIGHT (R)	210	130 *	1500	0.0867	
THRU (T)	390	390	1650	0.2364	
WB THRU (T)	936	936	1500	0.6240	
LEFT (L)	12	12	1500	0.0080	
T + L		948	1500	0.6320	0.6320

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.94
ADJUSTMENT FOR LOST YELLOW TIME:	0.00
TOTAL VOLUME-TO-CAPACITY RATIO:	0.94
INTERSECTION LEVEL OF SERVICE:	E

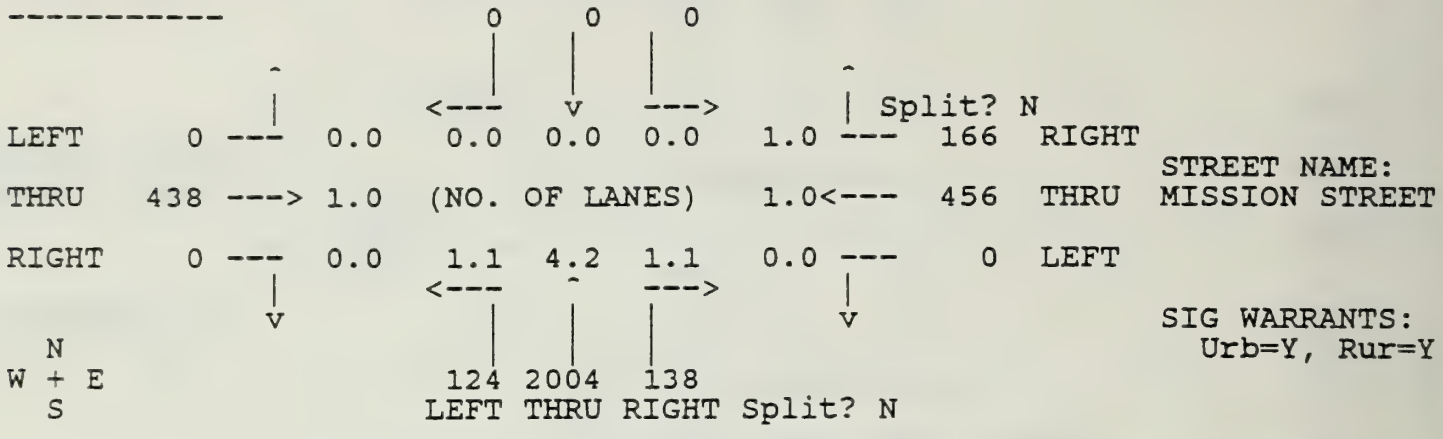
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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM PEAK HOUR -EXISTING CONDITIONS -DIAMOND LNS 03/07/94

INTERSECTION 9 7TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time 4:30-5:30 Peak Hour 4:30-5:30

TJKM METHOD



STREET NAME: MISSION STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: 7TH STREET

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	138	138	1500	0.0920	
	THRU (T)	2004	2004	6300	0.3181	
	LEFT (L)	124	124	1500	0.0827	
	T + R		2142	6300	0.3400	
	T + L		2128	6300	0.3378	
	T + R + L		2266	6300	0.3597	0.3597
EB	THRU (T)	438	438	1650	0.2655	
WB	RIGHT (R)	166	86 *	1500	0.0573	
	THRU (T)	456	456	1650	0.2764	0.2764

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.64
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.74
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

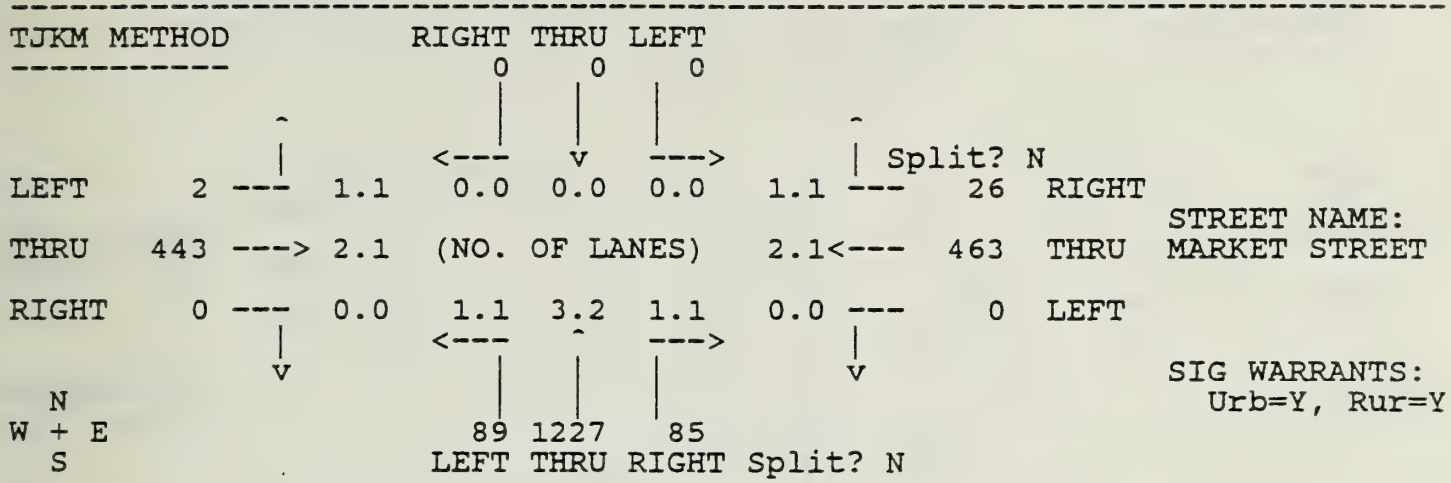
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Condition: PM PEAK HOUR -EXISTING CONDITIONS 03/07/94

INTERSECTION 12 7TH STREET/MARKET STREET SAN FRANCISCO
Count Date Time 4:00-5:00 Peak Hour 4:00-5:00

TJKM METHOD



STREET NAME: 7TH STREET

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	85	85	1500	0.0567	
	THRU (T)	1227	1227	4650	0.2639	
	LEFT (L)	89	89	1500	0.0593	
	T + R		1312	4650	0.2822	
	T + L		1316	4650	0.2830	
	T + R + L		1401	4650	0.3013	0.3013
EB	THRU (T)	443	443	3150	0.1406	
	LEFT (L)	2	2	1500	0.0013	0.0013
	T + L		445	3150	0.1413	
WB	RIGHT (R)	26	26	1500	0.0173	
	THRU (T)	463	463	3150	0.1470	
	T + R		489	3150	0.1552	0.1552

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.46
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.56
INTERSECTION LEVEL OF SERVICE:	A

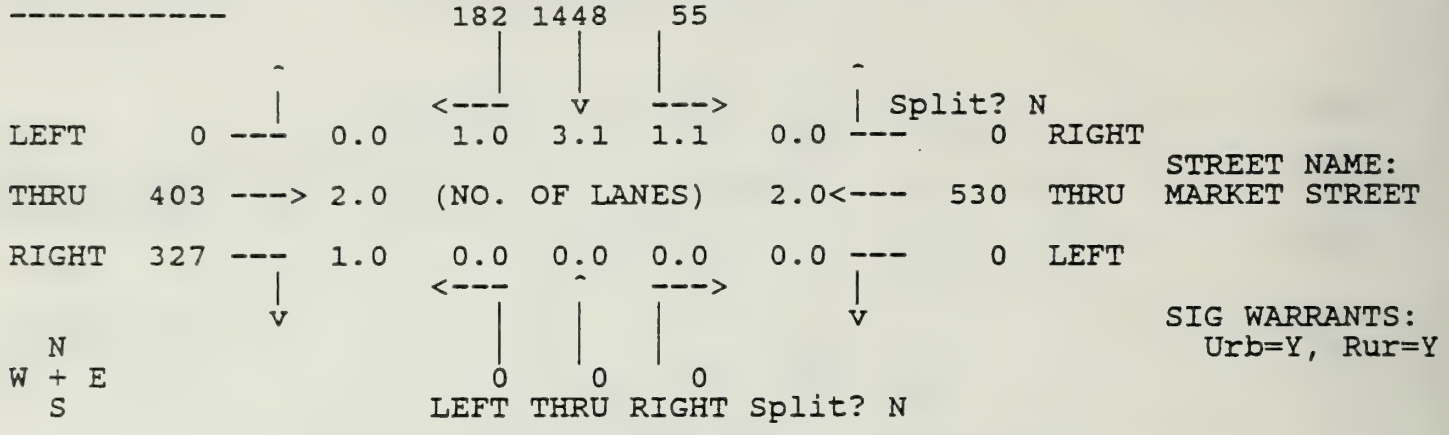
* ADJUSTED FOR RIGHT TURN ON RED
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Condition: PM PEAK HOUR - EXISTING CONDITIONS 03/18/94

INTERSECTION 13 8TH/GROVE/HYDE/MARKET STREET SAN FRANCISCO
Count Date Time 4:30-5:30 Peak Hour 4:30-5:30

TJKM METHOD



STREET NAME: 8TH/GROVE/HYDE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	182	102 *	1500	0.0680	
THRU (T)	1448	1448	4800	0.3017	
LEFT (L)	55	55	1500	0.0367	
T + L		1503	4800	0.3131	0.3131
EB RIGHT (R)	327	247 *	1500	0.1647	0.1647
THRU (T)	403	403	3300	0.1221	
WB THRU (T)	530	530	3300	0.1606	

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.48
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.58
INTERSECTION LEVEL OF SERVICE:	A

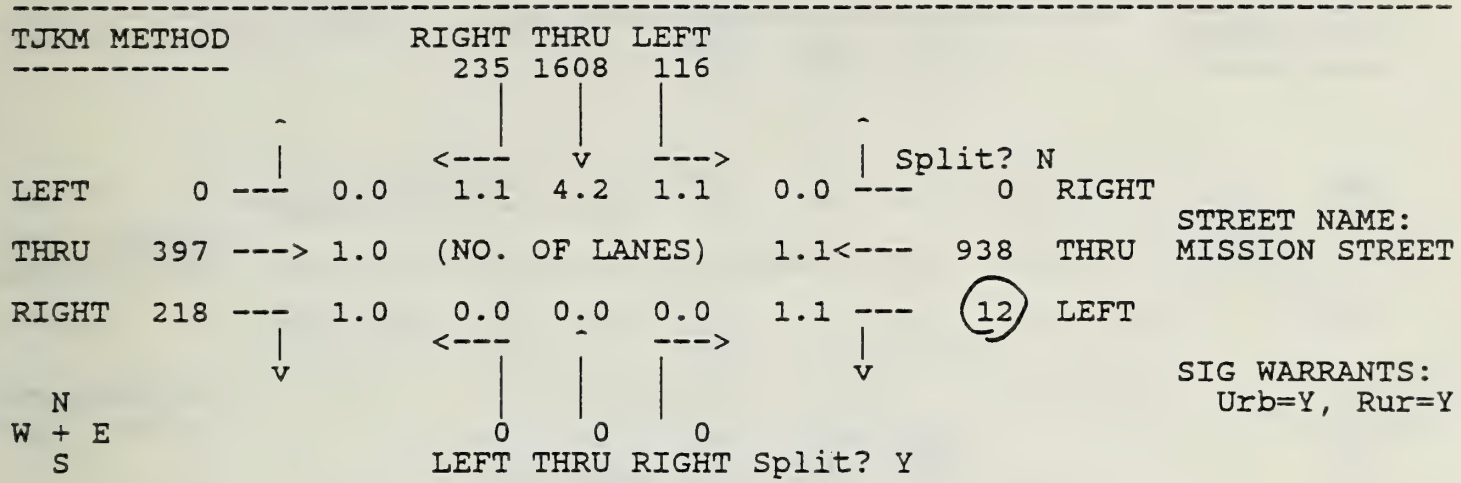
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Condition: PM EXISTING + PROJECT - ALTERNATIVE SITE 03/23/94

INTERSECTION 8 8TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: MISSION STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: 8TH STREET

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*		CAPACITY	V/C RATIO	CRITICAL V/C
SB	RIGHT (R)	235	235		1500	0.1567	
	THRU (T)	1608	1608		6300	0.2552	
	LEFT (L)	116	116		1500	0.0773	
	T + R		1843		6300	0.2925	
	T + L		1724		6300	0.2737	
	T + R + L		1959		6300	0.3110	0.3110
EB	RIGHT (R)	218	138	*	1500	0.0920	
	THRU (T)	397	397		1650	0.2406	
WB	THRU (T)	938	938		1500	0.6253	
	LEFT (L)	12	12		1500	0.0080	
	T + L		950		1500	0.6333	0.6333

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.94
ADJUSTMENT FOR LOST YELLOW TIME:	0.00
TOTAL VOLUME-TO-CAPACITY RATIO:	0.94
INTERSECTION LEVEL OF SERVICE:	E

* ADJUSTED FOR RIGHT TURN ON RED

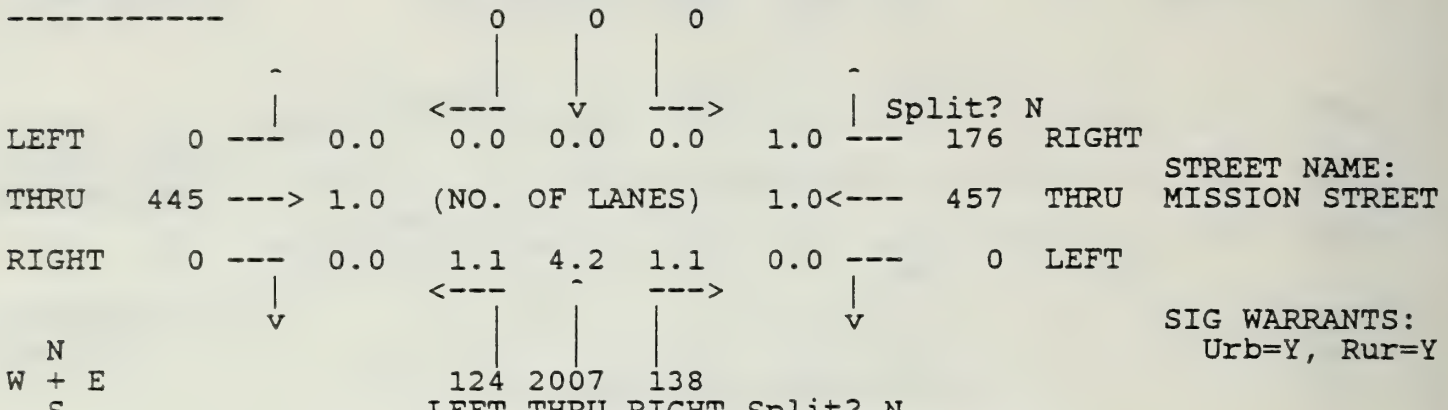
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Condition: PM EXISTING + PROJECT - ALTERNATIVE SITE 03/23/94

INTERSECTION 9 7TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: 7TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	138	138	1500	0.0920	
THRU (T)	2007	2007	6300	0.3186	
LEFT (L)	124	124	1500	0.0827	
T + R		2145	6300	0.3405	
T + L		2131	6300	0.3383	
T + R + L		2269	6300	0.3602	0.3602
EB THRU (T)	445	445	1650	0.2697	
WB RIGHT (R)	176	96 *	1500	0.0640	
THRU (T)	457	457	1650	0.2770	0.2770

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.64
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.74
INTERSECTION LEVEL OF SERVICE:	C

* ADJUSTED FOR RIGHT TURN ON RED

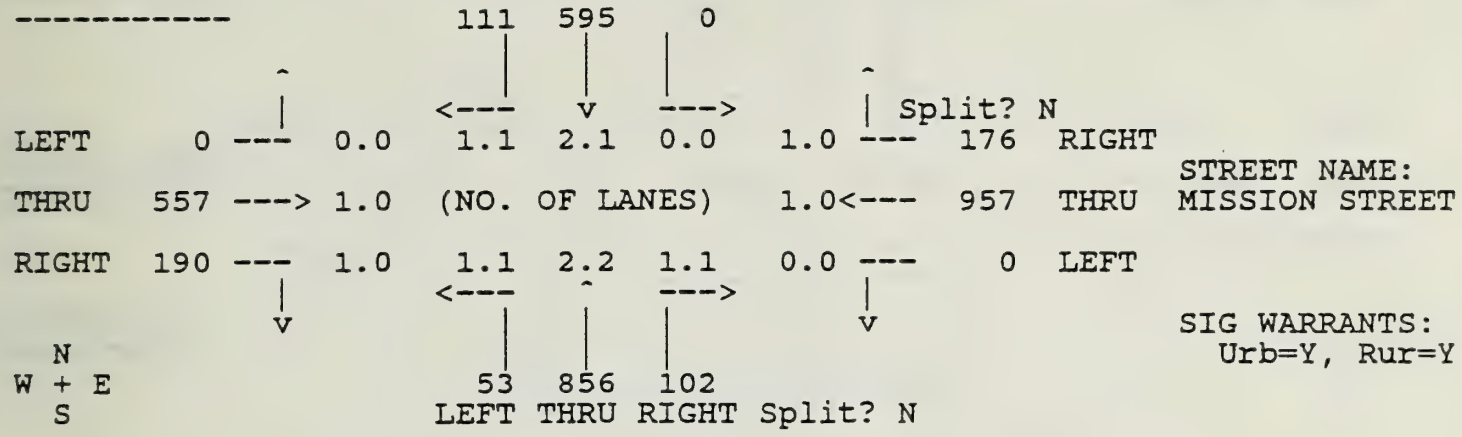
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Condition: PM EXISTING + PROJECT - ALTERNATIVE SITE 03/23/94

INTERSECTION 10 6TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: 6TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	102	102	1500	0.0680	
THRU (T)	856	856	3000	0.2853	
LEFT (L)	53	53	1500	0.0353	
T + R		958	3000	0.3193	
T + L		909	3000	0.3030	
T + R + L		1011	3000	0.3370	0.3370
SB RIGHT (R)	111	111	1500	0.0740	
THRU (T)	595	595	3150	0.1889	
T + R		706	3150	0.2241	
EB RIGHT (R)	190	84 *	1500	0.0560	
THRU (T)	557	557	1650	0.3376	
WB RIGHT (R)	176	96 *	1500	0.0640	
THRU (T)	957	957	1650	0.5800	0.5800

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.92
ADJUSTMENT FOR LOST YELLOW TIME:	0.01
TOTAL VOLUME-TO-CAPACITY RATIO:	0.93
INTERSECTION LEVEL OF SERVICE:	E

* ADJUSTED FOR RIGHT TURN ON RED
INT=SFDIAMON.INT,VOL=SFALTSTE.PMV+SFEXIST.PMV,CAP=LOSCAPSF.TAB

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Condition: PM EXISTING + PROJECT - ALTERNATIVE SITE 03/23/94

INTERSECTION 11 6TH STREET/MARKET STREET/GG SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

RIGHT THRU LEFT
18 572 120

| | | |
<--- v --->
Split? N

LEFT 0 --- 0.0 1.1 2.1 1.0 1.1 --- 26 RIGHT

STREET NAME:
THRU 447 ---> 2.0 (NO. OF LANES) 2.1<--- 406 THRU MARKET STREET/GG

RIGHT 166 --- 1.0 0.0 2.0 1.0 0.0 --- 0 LEFT
<--- ^ --->
v v

SIG WARRANTS:
Urb=Y, Rur=Y

N
W + E
S

0 804 83
LEFT THRU RIGHT Split? N

STREET NAME: 6TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	83	3 *	1500	0.0020	
THRU (T)	804	804	3300	0.2436	0.2436
SB RIGHT (R)	18	18	1500	0.0120	
THRU (T)	572	572	3150	0.1816	
LEFT (L)	120	120	1500	0.0800	0.0800
T + R		590	3150	0.1873	
EB RIGHT (R)	166	86 *	1500	0.0573	
THRU (T)	447	447	3300	0.1355	
WB RIGHT (R)	26	26	1500	0.0173	
THRU (T)	406	406	3150	0.1289	
T + R		432	3150	0.1371	0.1371

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.46
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.56
INTERSECTION LEVEL OF SERVICE:	A

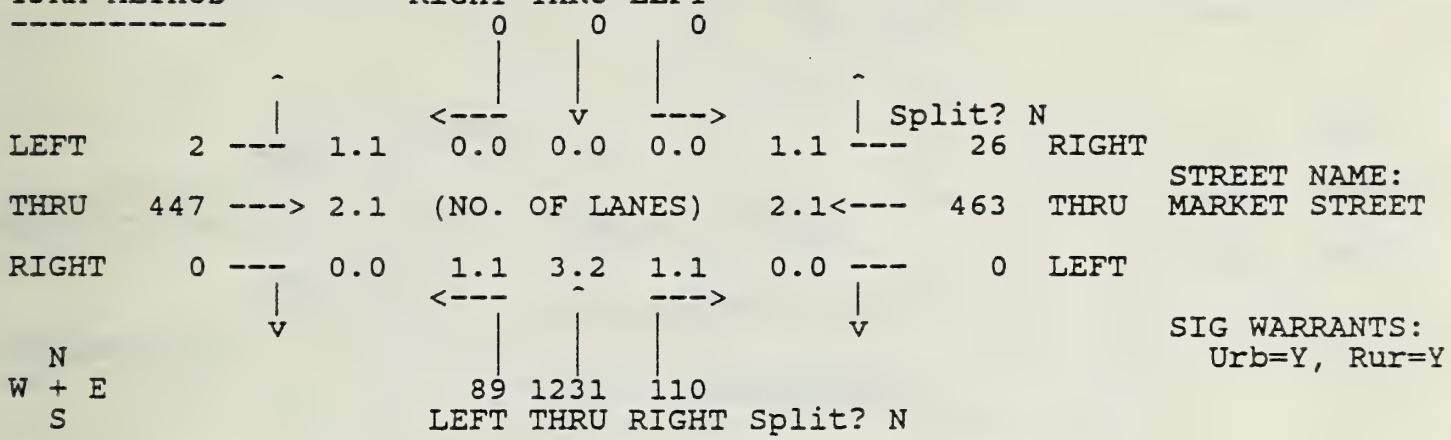
* ADJUSTED FOR RIGHT TURN ON RED
INT=SFDIAMON.INT,VOL=SFALTSTE.PMV+SFEXIST.PMV,CAP=LOSCAPSF.TAB

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Condition: PM EXISTING + PROJECT - ALTERNATIVE SITE 03/23/94

INTERSECTION 12 7TH STREET/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: MARKET STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: 7TH STREET

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	110	110	1500	0.0733	
	THRU (T)	1231	1231	4650	0.2647	
	LEFT (L)	89	89	1500	0.0593	
	T + R		1341	4650	0.2884	
	T + L		1320	4650	0.2839	
	T + R + L		1430	4650	0.3075	0.3075
EB	THRU (T)	447	447	3150	0.1419	
	LEFT (L)	2	2	1500	0.0013	0.0013
	T + L		449	3150	0.1425	
WB	RIGHT (R)	26	26	1500	0.0173	
	THRU (T)	463	463	3150	0.1470	
	T + R		489	3150	0.1552	0.1552

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.46
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.56
INTERSECTION LEVEL OF SERVICE:	A

* ADJUSTED FOR RIGHT TURN ON RED

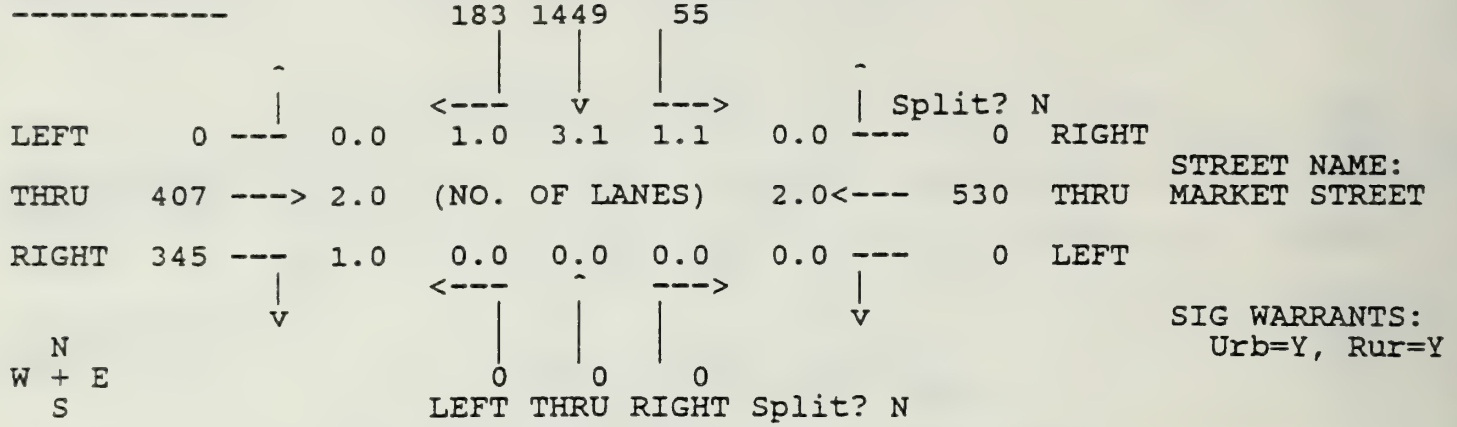
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Condition: PM EXISTING + PROJECT - ALTERNATIVE SITE 03/23/94

INTERSECTION 13 8TH/GROVE/HYDE/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD RIGHT THRU LEFT
183 1449 55



STREET NAME: MARKET STREET

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: 8TH/GROVE/HYDE

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*		CAPACITY	V/C RATIO	CRITICAL V/C
SB	RIGHT (R)	183	103	*	1500	0.0687	
	THRU (T)	1449	1449		4800	0.3019	
	LEFT (L)	55	55		1500	0.0367	
	T + L		1504		4800	0.3133	0.3133
EB	RIGHT (R)	345	265	*	1500	0.1767	0.1767
	THRU (T)	407	407		3300	0.1233	
WB	THRU (T)	530	530		3300	0.1606	

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.49
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.59
INTERSECTION LEVEL OF SERVICE:	A

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SFALTSTE.PMV+SFEXIST.PMV,CAP=LOSCAPSF.TAB

PM PEAK HOUR

ALTERNATIVE SITE

YEAR 2010 BASE CASE

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LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE WITH DIAMOND LANES 03/21/94

INTERSECTION 8 8TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

```
                    RIGHT THRU LEFT
                      269 1848  135
                       |   |    |
                       |   |    |
                  <----    v    ---->
LEFT      0 ---  0.0   1.1  4.2  1.1   0.0 ---    0  RIGHT
                                                    STREET NAME:
THRU    453 ---> 1.0  (NO. OF LANES)   1.1<--- 1087  THRU  MISSION STREET

RIGHT   244 ---  1.0   0.0  0.0  0.0   1.1 ---   14  LEFT
                  |    <----    ^    ---->    |
                  v             |   |   |     v          SIG WARRANTS:
  N                             |   |   |                  Urb=Y, Rur=Y
W + E                          0    0    0
  S                  LEFT THRU RIGHT Split? Y
```

Split? N

STREET NAME: 8TH STREET

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB	RIGHT (R)	269	269	1500	0.1793	
	THRU (T)	1848	1848	6300	0.2933	
	LEFT (L)	135	135	1500	0.0900	
	T + R		2117	6300	0.3360	
	T + L		1983	6300	0.3148	
	T + R + L		2252	6300	0.3575	0.3575
EB	RIGHT (R)	244	164 *	1500	0.1093	
	THRU (T)	453	453	1650	0.2745	
WB	THRU (T)	1087	1087	1500	0.7247	
	LEFT (L)	14	14	1500	0.0093	
	T + L		1101	1500	0.7340	0.7340

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	1.09
ADJUSTMENT FOR LOST YELLOW TIME:	0.00
TOTAL VOLUME-TO-CAPACITY RATIO:	1.09
INTERSECTION LEVEL OF SERVICE:	F

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SF2010.PMV,CAP=LOSCAP.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE WITH DIAMOND LANES 03/21/94

INTERSECTION 9 7TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD

			RIGHT	THRU	LEFT				
			0	0	0				
			<---	v	--->		Split? N		
LEFT	0	--- 0.0	0.0	0.0	0.0	1.0	---	193	RIGHT
THRU	509	---> 1.0	(NO. OF LANES)			1.0	<---	529	THRU
RIGHT	0	--- 0.0	1.1	4.2	1.1	0.0	---	0	LEFT
			<---	^	--->				

STREET NAME: MISSION STREET

SIG WARRANTS: Urb=Y, Rur=Y

N
W + E
S

144 2327 160
LEFT THRU RIGHT Split? N

STREET NAME: 7TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	160	160	1500	0.1067	
THRU (T)	2327	2327	6300	0.3694	
LEFT (L)	144	144	1500	0.0960	
T + R		2487	6300	0.3948	
T + L		2471	6300	0.3922	
T + R + L		2631	6300	0.4176	0.4176
EB THRU (T)	509	509	1650	0.3085	
WB RIGHT (R)	193	113 *	1500	0.0753	
THRU (T)	529	529	1650	0.3206	0.3206

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.74
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.84
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED
INT=SFDIAMON.INT,VOL=SF2010.PMV,CAP=LOSCAP.TAB

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Condition: PM PEAK HOUR -EXISTING CONDITIONS -DIAMOND LNS 03/07/94

INTERSECTION 10 6TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time 4:30-5:30 Peak Hour 4:30-5:30

TJKM METHOD

RIGHT THRU LEFT
109 582 0

Split? N

LEFT	0	---	0.0	1.1	2.1	0.0	1.0	---	176	RIGHT
THRU	550	--->	1.0	(NO. OF LANES)			1.0	<---	947	THRU
RIGHT	190	---	1.0	1.1	2.2	1.1	0.0	---	0	LEFT

STREET NAME: MISSION STREET

SIG WARRANTS: Urb=Y, Rur=Y

N
W + E
S

53 856 102
LEFT THRU RIGHT Split? N

STREET NAME: 6TH STREET

MOVEMENT		ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	102	102	1500	0.0680	
	THRU (T)	856	856	3000	0.2853	
	LEFT (L)	53	53	1500	0.0353	
	T + R		958	3000	0.3193	
	T + L		909	3000	0.3030	
	T + R + L		1011	3000	0.3370	0.3370
SB	RIGHT (R)	109	109	1500	0.0727	
	THRU (T)	582	582	3150	0.1848	
	T + R		691	3150	0.2194	
EB	RIGHT (R)	190	84 *	1500	0.0560	
	THRU (T)	550	550	1650	0.3333	
WB	RIGHT (R)	176	96 *	1500	0.0640	
	THRU (T)	947	947	1650	0.5739	0.5739

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.91
ADJUSTMENT FOR LOST YELLOW TIME:	0.01
TOTAL VOLUME-TO-CAPACITY RATIO:	0.92
INTERSECTION LEVEL OF SERVICE:	E

* ADJUSTED FOR RIGHT TURN ON RED
INT=SFDIAMON.INT,VOL=SFEXIST.PMV,CAP=LOSCAP.TAB

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Condition: PM PEAK HOUR -EXISTING CONDITIONS 03/07/94

INTERSECTION 11 6TH STREET/MARKET STREET/GG SAN FRANCISCO
Count Date Time 4:30-5:30 Peak Hour 4:30-5:30

TJKM METHOD

			RIGHT	THRU	LEFT				
			18	572	120				
LEFT	0	0.0	1.1	2.1	1.0	1.1	26	RIGHT	Split? N
THRU	432	2.0	(NO. OF LANES)			2.1	406	THRU	STREET NAME: MARKET STREET/GG
RIGHT	152	1.0	0.0	2.0	1.0	0.0	0	LEFT	
			0	804	83				SIG WARRANTS: Urb=Y, Rur=Y
			LEFT	THRU	RIGHT	Split? N			

N
W + E
S

STREET NAME: 6TH STREET

MOVEMENT		ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	83	3 *	1500	0.0020	
	THRU (T)	804	804	3300	0.2436	0.2436
SB	RIGHT (R)	18	18	1500	0.0120	
	THRU (T)	572	572	3150	0.1816	
	LEFT (L)	120	120	1500	0.0800	0.0800
	T + R		590	3150	0.1873	
EB	RIGHT (R)	152	72 *	1500	0.0480	
	THRU (T)	432	432	3300	0.1309	
WB	RIGHT (R)	26	26	1500	0.0173	
	THRU (T)	406	406	3150	0.1289	
	T + R		432	3150	0.1371	0.1371

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.46
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.56
INTERSECTION LEVEL OF SERVICE:	A

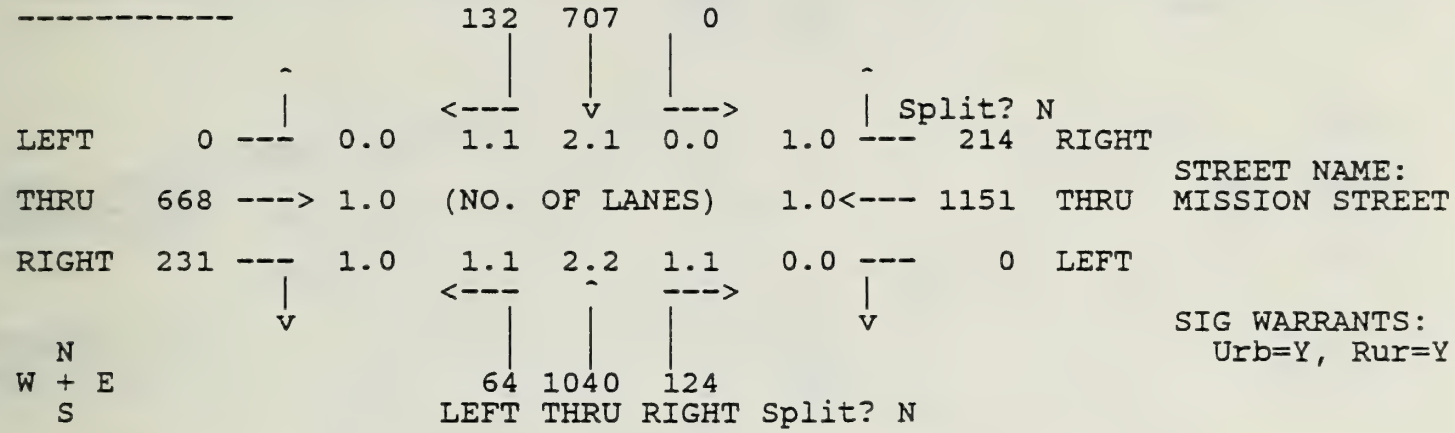
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Condition: PM 2010 BASE CASE WITH DIAMOND LANES 03/21/94

INTERSECTION 10 6TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time 4:30-5:30 Peak Hour 4:30-5:30

TJKM METHOD



STREET NAME: 6TH STREET

MOVEMENT		ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	124	124	1500	0.0827	
	THRU (T)	1040	1040	3000	0.3467	
	LEFT (L)	64	64	1500	0.0427	
	T + R		1164	3000	0.3880	
	T + L		1104	3000	0.3680	
	T + R + L		1228	3000	0.4093	0.4093
SB	RIGHT (R)	132	132	1500	0.0880	
	THRU (T)	707	707	3150	0.2244	
	T + R		839	3150	0.2663	
EB	RIGHT (R)	231	119 *	1500	0.0793	
	THRU (T)	668	668	1650	0.4048	
WB	RIGHT (R)	214	134 *	1500	0.0893	
	THRU (T)	1151	1151	1650	0.6976	0.6976

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	1.11
ADJUSTMENT FOR LOST YELLOW TIME:	0.00
TOTAL VOLUME-TO-CAPACITY RATIO:	1.11
INTERSECTION LEVEL OF SERVICE:	F

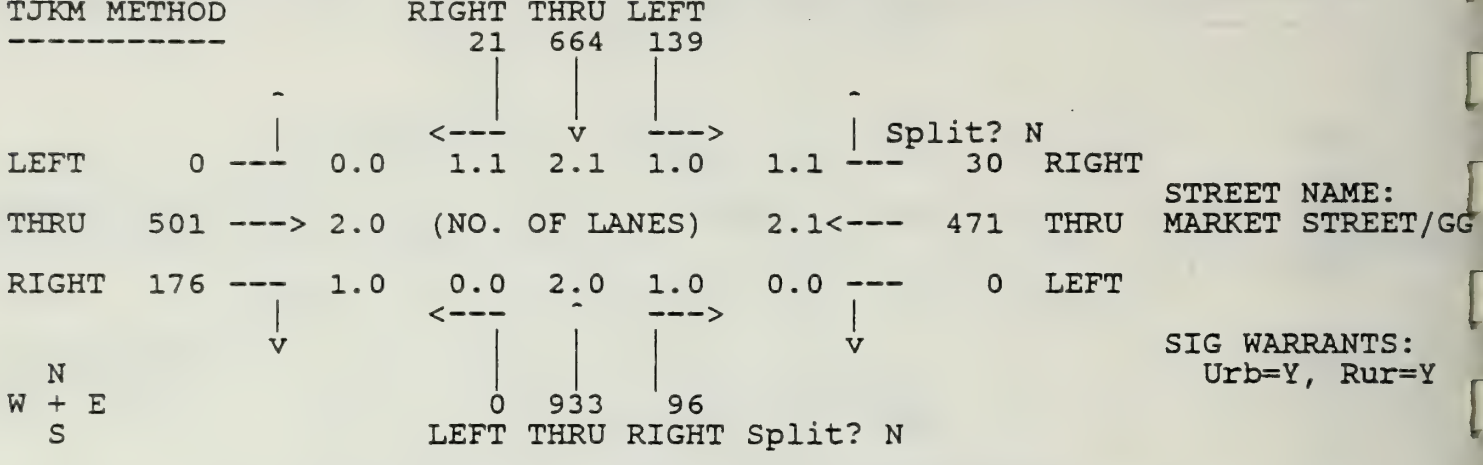
* ADJUSTED FOR RIGHT TURN ON RED
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Condition: PM PEAK HOUR - 2010 BASE (W/O STATE & PROJECT) 03/18/94

INTERSECTION 11 6TH STREET/MARKET STREET/GG SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: 6TH STREET

MOVEMENT		ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	96	16 *	1500	0.0107	
	THRU (T)	933	933	3300	0.2827	0.2827
SB	RIGHT (R)	21	21	1500	0.0140	
	THRU (T)	664	664	3150	0.2108	
	LEFT (L)	139	139	1500	0.0927	0.0927
	T + R		685	3150	0.2175	
EB	RIGHT (R)	176	96 *	1500	0.0640	
	THRU (T)	501	501	3300	0.1518	
WB	RIGHT (R)	30	30	1500	0.0200	
	THRU (T)	471	471	3150	0.1495	
	T + R		501	3150	0.1590	0.1590

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.53
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.63
INTERSECTION LEVEL OF SERVICE:	B

* ADJUSTED FOR RIGHT TURN ON RED

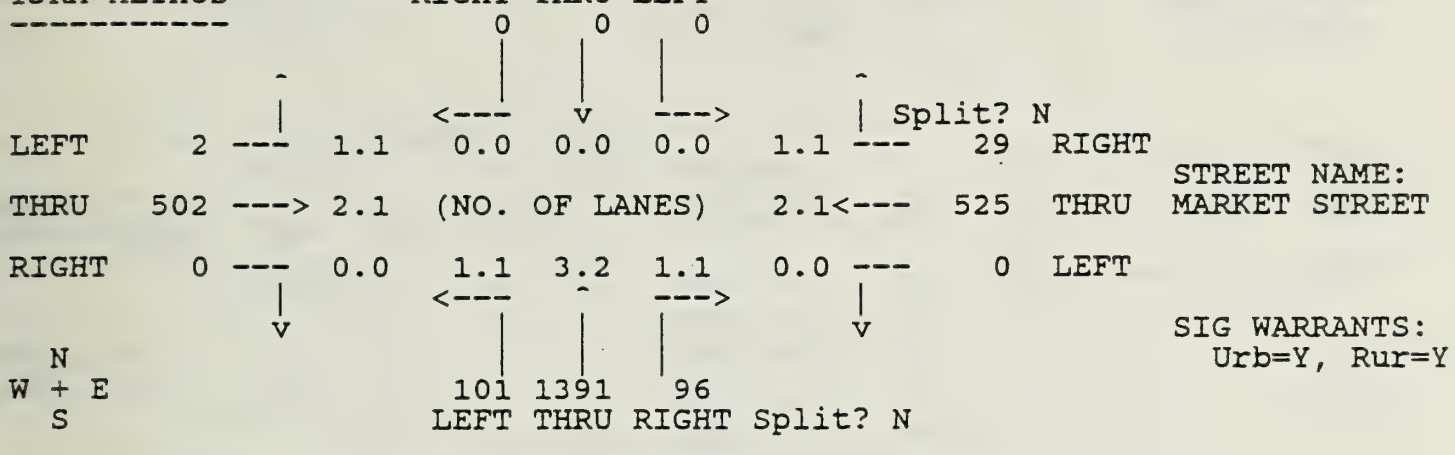
INT=SANFRAN.INT,VOL=SF2010.PMV,CAP=LOSCAP.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM PEAK HOUR - 2010 BASE (W/O STATE & PROJECT) 03/18/94

INTERSECTION 12 7TH STREET/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: 7TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	96	96	1500	0.0640	
THRU (T)	1391	1391	4650	0.2991	
LEFT (L)	101	101	1500	0.0673	
T + R		1487	4650	0.3198	
T + L		1492	4650	0.3209	
T + R + L		1588	4650	0.3415	0.3415
EB THRU (T)	502	502	3150	0.1594	
LEFT (L)	2	2	1500	0.0013	0.0013
T + L		504	3150	0.1600	
WB RIGHT (R)	29	29	1500	0.0193	
THRU (T)	525	525	3150	0.1667	
T + R		554	3150	0.1759	0.1759

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.52
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.62
INTERSECTION LEVEL OF SERVICE:	B

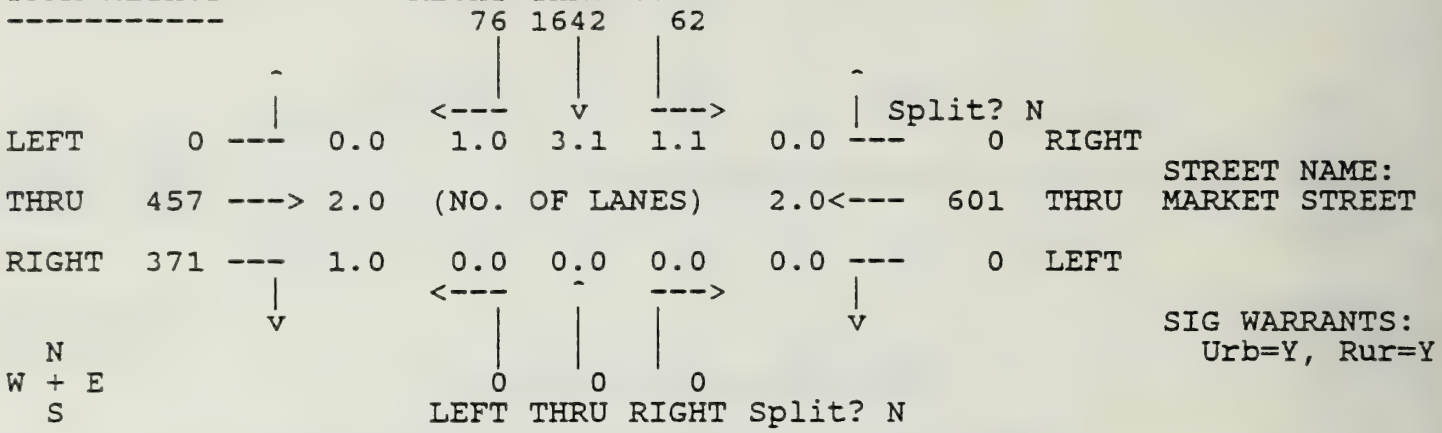
* ADJUSTED FOR RIGHT TURN ON RED
INT=SANFRAN.INT,VOL=SF2010.PMV,CAP=LOSCAP.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM PEAK HOUR - 2010 BASE (W/O STATE & PROJECT) 03/18/94

INTERSECTION 13 8TH/GROVE/HYDE/MARKET STREET SAN FRANCISCO
Count Date Time Peak Hour

TJKM METHOD



STREET NAME: 8TH/GROVE/HYDE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	76	0 *	1500	0.0000	
THRU (T)	1642	1642	4800	0.3421	
LEFT (L)	62	62	1500	0.0413	
T + L		1704	4800	0.3550	0.3550
EB RIGHT (R)	371	291 *	1500	0.1940	0.1940
THRU (T)	457	457	3300	0.1385	
WB THRU (T)	601	601	3300	0.1821	

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.55
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.65
INTERSECTION LEVEL OF SERVICE:	B

* ADJUSTED FOR RIGHT TURN ON RED
INT=SANFRAN.INT,VOL=SF2010.PMV,CAP=LOSCAP.TAB

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Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 8 8TH STREET/MISSION STREET SAN FRANCISCO

Count Date Time Peak Hour

TJKM METHOD

```
                RIGHT THRU LEFT
                269 1928  135
                  |   |   |
                  |   |   |
                <---  v  --->      | Split? N
LEFT     0 --- 0.0  1.1 4.2 1.1  0.0 ---   0  RIGHT
                                              STREET NAME:
THRU   453 ---> 1.0 (NO. OF LANES)  1.1<--- 1087 THRU MISSION STREET

RIGHT  244 --- 1.0  0.0 0.0 0.0  1.1 ---  14  LEFT
               |    <---  -  --->    |
               v      |   |   |      v          SIG WARRANTS:
  N            |      |   |   |                   Urb=Y, Rur=Y
W + E          |      0   0   0
  S            |    LEFT THRU RIGHT Split? Y
```

STREET NAME: 8TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	269	269	1500	0.1793	
THRU (T)	1928	1928	6300	0.3060	
LEFT (L)	135	135	1500	0.0900	
T + R		2197	6300	0.3487	
T + L		2063	6300	0.3275	
T + R + L		2332	6300	0.3702	0.3702
EB RIGHT (R)	244	164 *	1500	0.1093	
THRU (T)	453	453	1650	0.2745	
WB THRU (T)	1087	1087	1500	0.7247	
LEFT (L)	14	14	1500	0.0093	
T + L		1101	1500	0.7340	0.7340

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	1.10
ADJUSTMENT FOR LOST YELLOW TIME:	0.00
TOTAL VOLUME-TO-CAPACITY RATIO:	1.10
INTERSECTION LEVEL OF SERVICE:	F

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 9 7TH STREET/MISSION STREET SAN FRANCISCO

Count Date Time Peak Hour

```
TJKM METHOD          RIGHT THRU LEFT
-----------             0    0    0
                        |    |    |
                        |    |    |
              |       <---   v   --->       | Split? N
LEFT     0 ---  0.0   0.0  0.0  0.0   1.0 ---  193  RIGHT
                                                      STREET NAME:
THRU   509 ---> 1.0  (NO. OF LANES)   1.0<---  529  THRU  MISSION STREET

RIGHT    0 ---  0.0   1.1  4.2  1.1   0.0 ---    0  LEFT
             |       <---   *   --->       |
             v          |    |    |        v              SIG WARRANTS:
  N                     |    |    |                         Urb=Y, Rur=Y
W + E                  144 2330  160
  S                    LEFT THRU RIGHT Split? N
```

STREET NAME: 7TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	160	160	1500	0.1067	
THRU (T)	2330	2330	6300	0.3698	
LEFT (L)	144	144	1500	0.0960	
T + R		2490	6300	0.3952	
T + L		2474	6300	0.3927	
T + R + L		2634	6300	0.4181	0.4181
EB THRU (T)	509	509	1650	0.3085	
WB RIGHT (R)	193	113 *	1500	0.0753	
THRU (T)	529	529	1650	0.3206	0.3206

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.74
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.84
INTERSECTION LEVEL OF SERVICE:	D

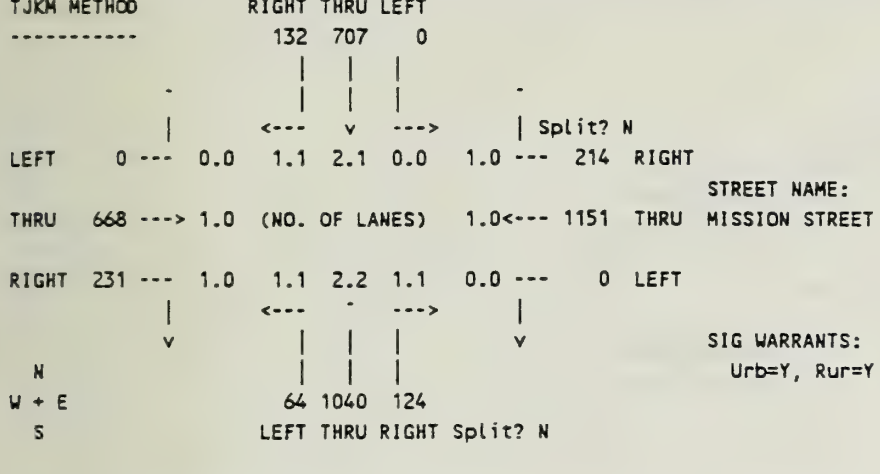
* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 10 6TH STREET/MISSION STREET SAN FRANCISCO
Count Date Time Peak Hour 4:30-5:30



MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	124	124	1500	0.0827	
THRU (T)	1040	1040	3000	0.3467	
LEFT (L)	64	64	1500	0.0427	
T + R		1164	3000	0.3880	
T + L		1104	3000	0.3680	
T + R + L		1228	3000	0.4093	0.4093
SB RIGHT (R)	132	132	1500	0.0880	
THRU (T)	707	707	3150	0.2244	
T + R		839	3150	0.2663	
EB RIGHT (R)	231	119 *	1500	0.0793	
THRU (T)	668	668	1650	0.4048	
WB RIGHT (R)	214	134 *	1500	0.0893	
THRU (T)	1151	1151	1650	0.6976	0.6976

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	1.11
ADJUSTMENT FOR LOST YELLOW TIME:	0.00
TOTAL VOLUME-TO-CAPACITY RATIO:	1.11
INTERSECTION LEVEL OF SERVICE:	F

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 11 6TH STREET/MARKET STREET/GG SAN FRANCISCO

Count Date Time Peak Hour

```
TJKM METHOD          RIGHT THRU LEFT
-----------            21  664  139
                        |   |   |
              -         |   |   |         -
              |       <---  v  --->       | Split? N
LEFT     0 ---  0.0   1.1  2.1  1.0   1.1 ---   30  RIGHT
                                                    STREET NAME:
THRU   523 ---> 2.0  (NO. OF LANES)   2.1<---  482  THRU  MARKET STREET/GG

RIGHT  176 ---  1.0   0.0  2.0  1.0   0.0 ---    0  LEFT
              |       <---  -  --->       |
              v         |   |   |         v             SIG WARRANTS:
  N                     |   |   |                         Urb=Y, Rur=Y
W + E                   0  933   96
  S                   LEFT THRU RIGHT Split? N

               STREET NAME: 6TH STREET
```

MOVEMENT		ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	96	16 *	1500	0.0107	
	THRU (T)	933	933	3300	0.2827	0.2827
SB	RIGHT (R)	21	21	1500	0.0140	
	THRU (T)	664	664	3150	0.2108	
	LEFT (L)	139	139	1500	0.0927	0.0927
	T + R		685	3150	0.2175	
EB	RIGHT (R)	176	96 *	1500	0.0640	
	THRU (T)	523	523	3300	0.1585	
WB	RIGHT (R)	30	30	1500	0.0200	
	THRU (T)	482	482	3150	0.1530	
	T + R		512	3150	0.1625	0.1625

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.54
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.64
INTERSECTION LEVEL OF SERVICE:	B

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 12 7TH STREET/MARKET STREET SAN FRANCISCO

Count Date Time Peak Hour

```
TJKM METHOD          RIGHT THRU LEFT
-----------             0    0    0
                        |    |    |
                        |    |    |
              |         <---  v   --->       | Split? N
LEFT     2 --- 1.1   0.0  0.0  0.0   1.1 ---   40  RIGHT
                                                      STREET NAME:
THRU   524 ---> 2.1  (NO. OF LANES)   2.1<---  525  THRU  MARKET STREET

RIGHT    0 ---  0.0   1.1  3.2  1.1   0.0 ---    0  LEFT
              |        <---   -   --->       |
              v           |    |    |         v              SIG WARRANTS:
  N                       |    |    |                          Urb=Y, Rur=Y
W + E                   101 1394   96
  S                   LEFT THRU RIGHT Split? N
```

STREET NAME: 7TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	96	96	1500	0.0640	
THRU (T)	1394	1394	4650	0.2998	
LEFT (L)	101	101	1500	0.0673	
T + R		1490	4650	0.3204	
T + L		1495	4650	0.3215	
T + R + L		1591	4650	0.3422	0.3422
EB THRU (T)	524	524	3150	0.1663	
LEFT (L)	2	2	1500	0.0013	0.0013
T + L		526	3150	0.1670	
WB RIGHT (R)	40	40	1500	0.0267	
THRU (T)	525	525	3150	0.1667	
T + R		565	3150	0.1794	0.1794

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.52
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.62
INTERSECTION LEVEL OF SERVICE:	B

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TAB

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + STATE BUILDING 04/04/94

INTERSECTION 13 8TH/GROVE/HYDE/MARKET STREET SAN FRANCISCO

Count Date Time Peak Hour 4:30-5:30

```
TJKM METHOD          RIGHT THRU LEFT
-----------            206 1721   84
                         |   |   |
                         |   |   |
                <---     v   --->      | Split? N
LEFT     0 ---  0.0   1.0  3.1  1.1   0.0 ---    0  RIGHT
                                                   STREET NAME:
THRU   457 ---> 2.0  (NO. OF LANES)   2.0<---  601  THRU  MARKET STREET

RIGHT  371 ---  1.0   0.0  0.0  0.0   0.0 ---    0  LEFT
               |      <---   -   --->      |
               v        |   |   |         v            SIG WARRANTS:
  N                     |   |   |                        Urb=Y, Rur=Y
W + E                   0   0   0
  S                   LEFT THRU RIGHT Split? N
```

STREET NAME: 8TH/GROVE/HYDE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	206	126 *	1500	0.0840	
THRU (T)	1721	1721	4800	0.3585	
LEFT (L)	84	84	1500	0.0560	
T + L		1805	4800	0.3760	0.3760
EB RIGHT (R)	371	291 *	1500	0.1940	0.1940
THRU (T)	457	457	3300	0.1385	
WB THRU (T)	601	601	3300	0.1821	

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.57
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.67
INTERSECTION LEVEL OF SERVICE:	B

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF.TAB

```
LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM
================================================================================
Condition: PM 2010 BASE CASE + ST.BLDG + PROJECT-ALT.SITE       04/04/94
================================================================================
INTERSECTION    8 8TH STREET/MISSION STREET         SAN FRANCISCO
Count Date                    Time                  Peak Hour
--------------------------------------------------------------------------------
TJKM METHOD          RIGHT THRU LEFT
-----------            272 1944  135
                        |   |   |
             .          |   |   |          .
             |       <---   v   --->       | Split? N
LEFT     0 ---  0.0   1.1  4.2  1.1   0.0 ---    0  RIGHT
                                                    STREET NAME:
THRU   460 ---> 1.0  (NO. OF LANES)   1.1<--- 1089  THRU  MISSION STREET

RIGHT  252 ---  1.0   0.0  0.0  0.0   1.1 ---   14  LEFT
             |       <---   .   --->       |
             v          |   |   |          v              SIG WARRANTS:
  N                     |   |   |                           Urb=Y, Rur=Y
W + E                   0   0   0
  S                   LEFT THRU RIGHT Split? Y

               STREET NAME: 8TH STREET
================================================================================
                ORIGINAL   ADJUSTED                 V/C      CRITICAL
   MOVEMENT      VOLUME     VOLUME*   CAPACITY     RATIO       V/C
--------------------------------------------------------------------------------
SB  RIGHT (R)      272        272       1500      0.1813
    THRU (T)      1944       1944       6300      0.3086
    LEFT (L)       135        135       1500      0.0900
    T + R                    2216       6300      0.3517
    T + L                    2079       6300      0.3300
    T + R + L                2351       6300      0.3732     0.3732
--------------------------------------------------------------------------------
EB  RIGHT (R)      252        172 *     1500      0.1147
    THRU (T)       460        460       1650      0.2788
--------------------------------------------------------------------------------
WB  THRU (T)      1089       1089       1500      0.7260
    LEFT (L)        14         14       1500      0.0093
    T + L                    1103       1500      0.7353     0.7353
================================================================================
     VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:          1.11
     ADJUSTMENT FOR LOST YELLOW TIME:                        0.00
     TOTAL VOLUME-TO-CAPACITY RATIO:                         1.11
     INTERSECTION LEVEL OF SERVICE:                            F
================================================================================
* ADJUSTED FOR RIGHT TURN ON RED
INT=SFDIAMON.INT,VOL=SFALTSTE.PMV+SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF
```

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + ST.BLDG + PROJECT-ALT.SITE 04/04/94

INTERSECTION 9 7TH STREET/MISSION STREET SAN FRANCISCO

Count Date Time Peak Hour

TJKM METHOD

```
                    RIGHT THRU LEFT
                      0    0    0
                      |    |    |
                      |    |    |
                <---  v    |    |  --->
LEFT     0 ---  0.0   0.0  0.0  0.0   1.0 ---  203  RIGHT
                                                    STREET NAME:
THRU   516 ---> 1.0  (NO. OF LANES)   1.0<---  530  THRU  MISSION STREET

RIGHT    0 ---  0.0   1.1  4.2  1.1   0.0 ---    0  LEFT
               |     <---  |    --->     |
               v           |    |        v            SIG WARRANTS:
  N                        |    |                       Urb=Y, Rur=Y
W + E                    144 2333  160
  S                      LEFT THRU RIGHT Split? N

                STREET NAME: 7TH STREET
```

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	160	160	1500	0.1067	
THRU (T)	2333	2333	6300	0.3703	
LEFT (L)	144	144	1500	0.0960	
T + R		2493	6300	0.3957	
T + L		2477	6300	0.3932	
T + R + L		2637	6300	0.4186	0.4186
EB THRU (T)	516	516	1650	0.3127	
WB RIGHT (R)	203	123 *	1500	0.0820	
THRU (T)	530	530	1650	0.3212	0.3212

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.74
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.84
INTERSECTION LEVEL OF SERVICE:	D

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SFALTSTE.PMV+SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF

```
LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM
================================================================================
Condition: PM 2010 BASE CASE + ST.BLDG + PROJECT-ALT.SITE       04/04/94
================================================================================
INTERSECTION   10 6TH STREET/MISSION STREET         SAN FRANCISCO
Count Date                    Time                Peak Hour
--------------------------------------------------------------------------------
TJKM METHOD          RIGHT THRU LEFT
-----------            134  720    0
                        |    |    |
                        |    |    |
                        |    |    |
                       <---   v   --->       | Split? N
LEFT     0 ---  0.0   1.1  2.1  0.0   1.0 ---  214  RIGHT
                                                      STREET NAME:
THRU   675 ---> 1.0  (NO. OF LANES)   1.0<--- 1161  THRU  MISSION STREET

RIGHT  231 ---  1.0   1.1  2.2  1.1   0.0 ---    0  LEFT
                       <---   .   --->       |
                       v       |    |        v              SIG WARRANTS:
  N                            |    |                         Urb=Y, Rur=Y
W + E                         64 1040  124.
  S                          LEFT THRU RIGHT Split? N

              STREET NAME: 6TH STREET
================================================================================
                ORIGINAL   ADJUSTED                  V/C      CRITICAL
   MOVEMENT     VOLUME     VOLUME*    CAPACITY      RATIO       V/C
--------------------------------------------------------------------------------
NB  RIGHT (R)     124         124        1500       0.0827
    THRU (T)     1040        1040        3000       0.3467
    LEFT (L)       64          64        1500       0.0427
    T + R                    1164        3000       0.3880
    T + L                    1104        3000       0.3680
    T + R + L                1228        3000       0.4093      0.4093
--------------------------------------------------------------------------------
SB  RIGHT (R)     134         134        1500       0.0893
    THRU (T)      720         720        3150       0.2286
    T + R                     854        3150       0.2711
--------------------------------------------------------------------------------
EB  RIGHT (R)     231         119 *      1500       0.0793
    THRU (T)      675         675        1650       0.4091
--------------------------------------------------------------------------------
WB  RIGHT (R)     214         134 *      1500       0.0893
    THRU (T)     1161        1161        1650       0.7036      0.7036
================================================================================
     VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:          1.11
     ADJUSTMENT FOR LOST YELLOW TIME:                        0.00
     TOTAL VOLUME-TO-CAPACITY RATIO:                         1.11
     INTERSECTION LEVEL OF SERVICE:                            F
================================================================================
* ADJUSTED FOR RIGHT TURN ON RED
INT=SFDIAMON.INT,VOL=SFALTSTE.PMV+SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF
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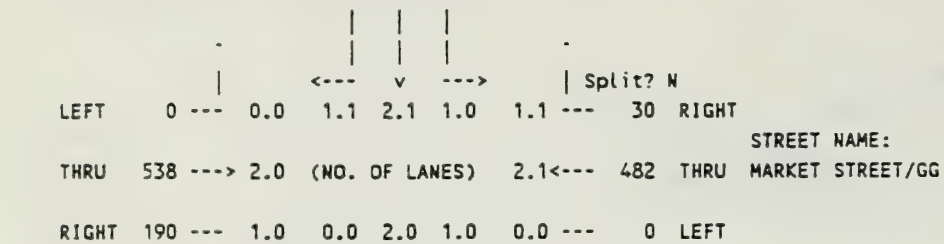
Condition: PM 2010 BASE CASE + ST.BLDG + PROJECT-ALT.SITE 04/04/94

INTERSECTION 11 6TH STREET/MARKET STREET/GG SAN FRANCISCO

Count Date Time Peak Hour

TJKM METHOD RIGHT THRU LEFT

21 664 139



STREET NAME: 6TH STREET

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	96	16 *	1500	0.0107	
THRU (T)	933	933	3300	0.2827	0.2827
SB RIGHT (R)	21	21	1500	0.0140	
THRU (T)	664	664	3150	0.2108	
LEFT (L)	139	139	1500	0.0927	0.0927
T + R		685	3150	0.2175	
EB RIGHT (R)	190	110 *	1500	0.0733	
THRU (T)	538	538	3300	0.1630	0.1630
WB RIGHT (R)	30	30	1500	0.0200	
THRU (T)	482	482	3150	0.1530	
T + R		512	3150	0.1625	

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.54
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.64
INTERSECTION LEVEL OF SERVICE:	B

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SFALTSTE.PMV+SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

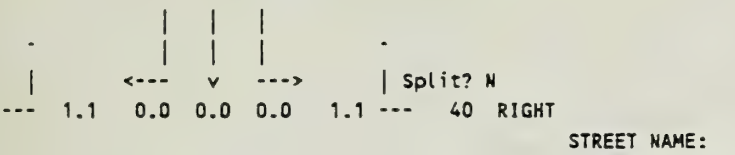
Condition: PM 2010 BASE CASE + ST.BLDG + PROJECT-ALT.SITE 04/04/94

INTERSECTION 12 7TH STREET/MARKET STREET SAN FRANCISCO

Count Date Time Peak Hour

TJKM METHOD RIGHT THRU LEFT

0 0 0



STREET NAME: MARKET STREET

STREET NAME: 7TH STREET

SIG WARRANTS: Urb=Y, Rur=Y

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	121	121	1500	0.0807	
THRU (T)	1398	1398	4650	0.3006	
LEFT (L)	101	101	1500	0.0673	
T + R		1519	4650	0.3267	
T + L		1499	4650	0.3224	
T + R + L		1620	4650	0.3484	0.3484
EB THRU (T)	528	528	3150	0.1676	
LEFT (L)	2	2	1500	0.0013	0.0013
T + L		530	3150	0.1683	
WB RIGHT (R)	40	40	1500	0.0267	
THRU (T)	525	525	3150	0.1667	
T + R		565	3150	0.1794	0.1794

VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.53
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.63
INTERSECTION LEVEL OF SERVICE:	B

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SFALTSTE.PMV+SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF

LOS Software Licensed to Wilbur Smith Associates-Oakland by TJKM

Condition: PM 2010 BASE CASE + ST.BLDG + PROJECT-ALT.SITE 04/04/94

INTERSECTION 13 8TH/GROVE/HYDE/MARKET STREET SAN FRANCISCO

Count Date Time Peak Hour

```
TJKM METHOD          RIGHT THRU LEFT
-----------           207 1722   84
                        |   |   |
              .         |   |   |         .
              |       <---  v   --->      | Split? N
LEFT     0 --- 0.0   1.0  3.1  1.1  0.0 ---    0  RIGHT
                                                    STREET NAME:
THRU   461 ---> 2.0  (NO. OF LANES)   2.0<---  601  THRU  MARKET STREET

RIGHT  389 ---  1.0   0.0  0.0  0.0  0.0 ---    0  LEFT
              |       <---   .   --->      |
              v         |   |   |         v            SIG WARRANTS:
  N                     |   |   |                        Urb=Y, Rur=Y
W + E                   0   0   0
  S                   LEFT THRU RIGHT Split? N
```

STREET NAME: 8TH/GROVE/HYDE

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB RIGHT (R)	207	127 *	1500	0.0847	
THRU (T)	1722	1722	4800	0.3587	
LEFT (L)	84	84	1500	0.0560	
T + L		1806	4800	0.3762	0.3762
EB RIGHT (R)	389	309 *	1500	0.2060	0.2060
THRU (T)	461	461	3300	0.1397	
WB THRU (T)	601	601	3300	0.1821	

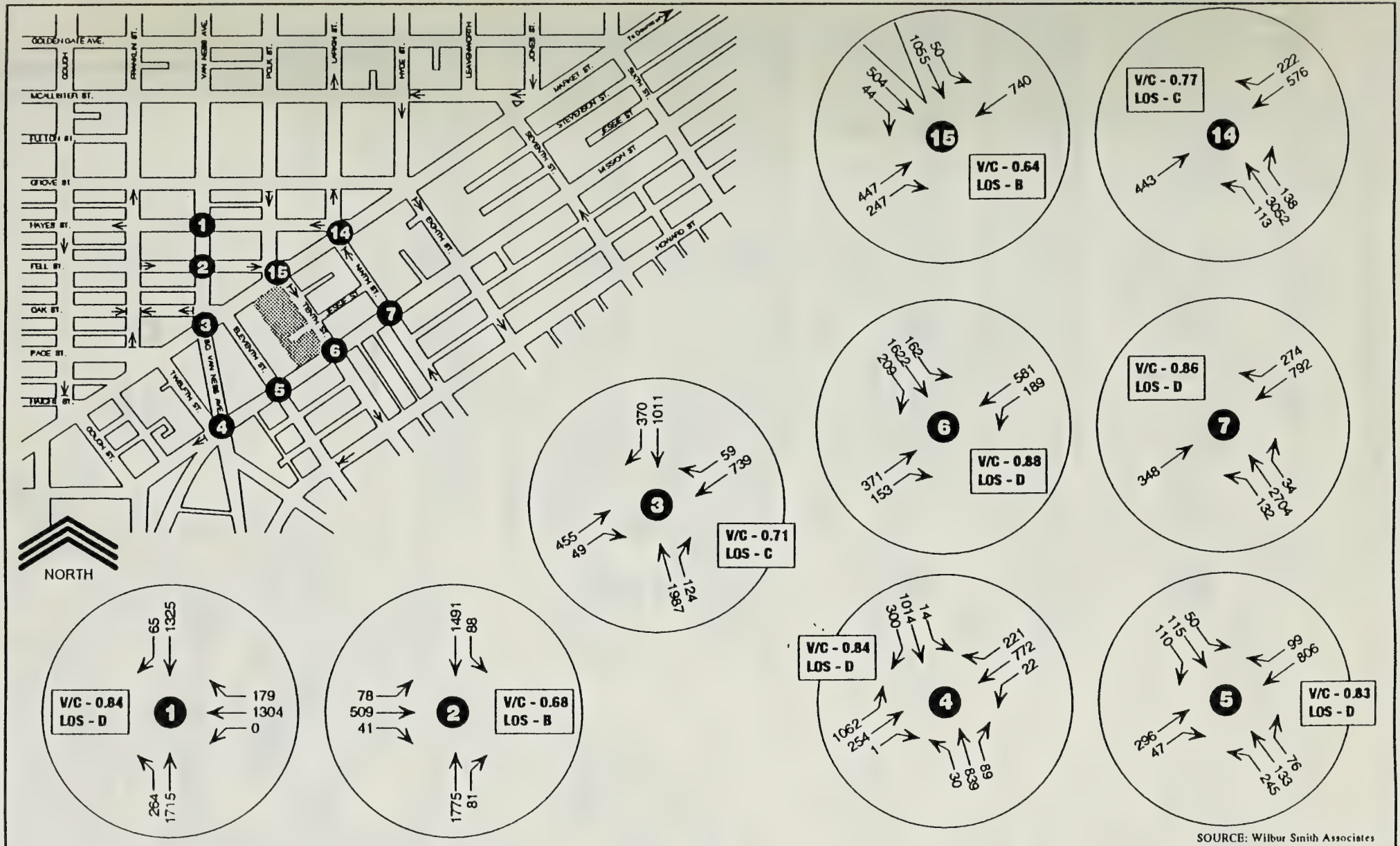
VOLUME-TO-CAPACITY RATIO FOR THE INTERSECTION:	0.58
ADJUSTMENT FOR LOST YELLOW TIME:	0.10
TOTAL VOLUME-TO-CAPACITY RATIO:	0.68
INTERSECTION LEVEL OF SERVICE:	B

* ADJUSTED FOR RIGHT TURN ON RED

INT=SFDIAMON.INT,VOL=SFALTSTE.PMV+SF2010.PMV+STATEBLD.PMV,CAP=LOSCAPSF

FIGURES AND TABLES

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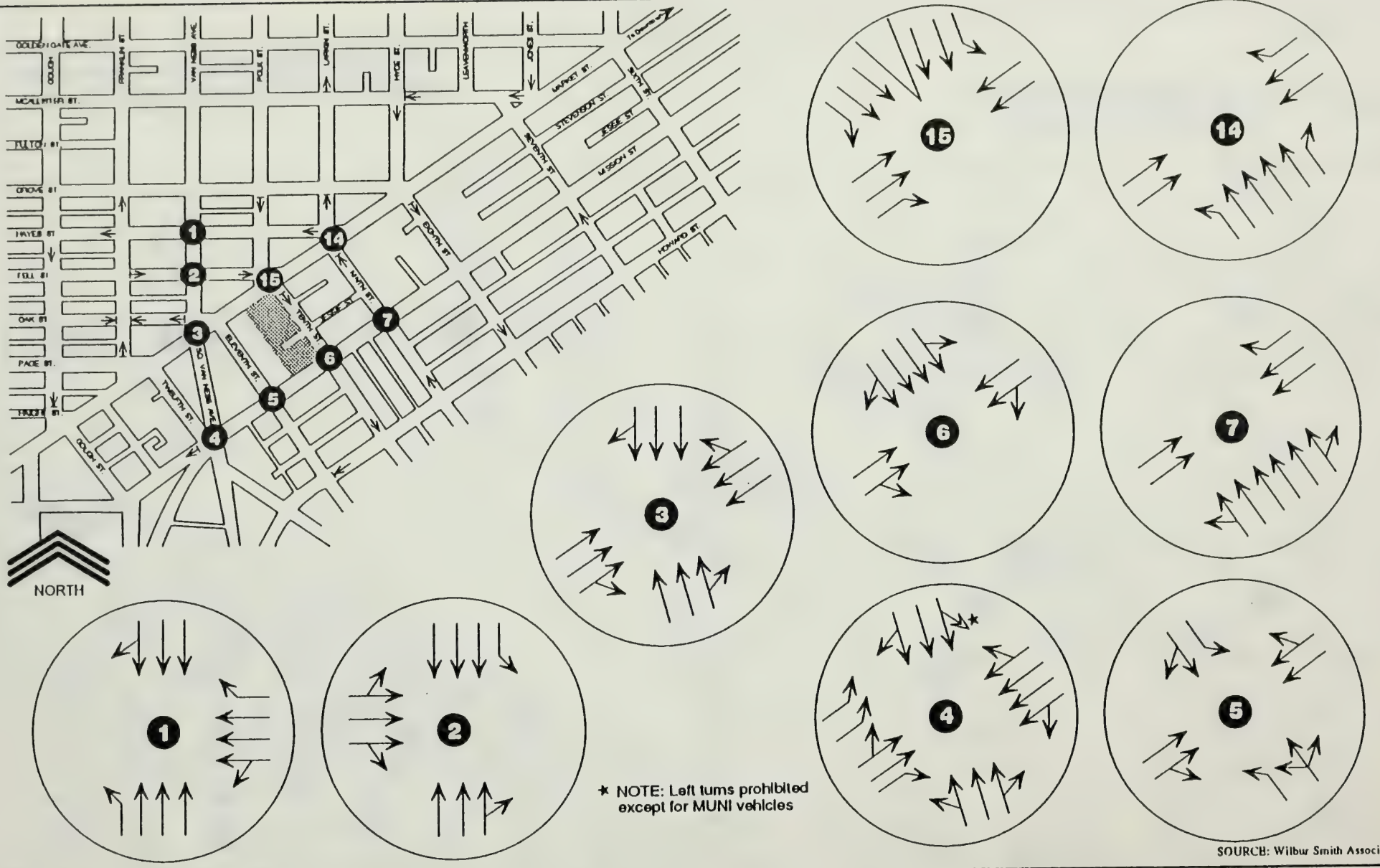


SOURCE: Wilbur Smith Associates

EXISTING PM PEAK HOUR VOLUMES
TENTH AND MARKET ALTERNATIVE

SAN FRANCISCO FEDERAL BUILDING
Environmental Impact Statement/Report

Figure F-1



EXISTING STUDY INTERSECTION GEOMETRY
TENTH AND MARKET ALTERNATIVE

SAN FRANCISCO FEDERAL BUILDING
Environmental Impact Statement/Report

Figure F-2

LEVEL OF SERVICE CONCEPT DIAGRAM

LEVEL OF SERVICE 'A' - V/C ratios = 0.0 - 0.60

Describes operations with very low delay, i.e., less than 5 seconds per vehicle. This occurs when signal progression is extremely favorable. Most vehicles arrive during the green phase and are not required to stop at all.

Corresponding delays usually range from 0.0 to 5.0 seconds.

LEVEL OF SERVICE 'B' - V/C ratios = 0.61 - 0.70

Describes operations with delay in the range of 5 to 15 seconds per vehicle generally characterized by good signal progression and/or short cycle lengths. More vehicles are required to stop than for LOS 'A' causing higher levels of average delay.

Corresponding delays usually range from 5.1 to 15.0 seconds.

LEVEL OF SERVICE 'C' - V/C ratios = 0.71 - 0.80

Describes operations with delay in the range of 15 to 25 seconds per vehicle. Occasionally, vehicles may be required to wait more than one red signal phase. The number of vehicles stopping at this level is significant although many still pass through the intersection without stopping.

Corresponding delays usually range from 15.1 to 25.0 seconds.

LEVEL OF SERVICE 'D' - V/C ratios = 0.81 - 0.90

Describes operations with delay in the range of 25 of 40 seconds per vehicle. At LOS 'D', the influence of congestion becomes more noticeable. Many vehicles stop, and the proportion of vehicles not stopping declines. The number of vehicles failing to clear the signal during the first green phase is noticeable.

Corresponding delays usually range from 25.1 to 40.0 seconds.

LEVEL OF SERVICE 'E' - V/C ratios = 0.91 - 1.00

Describes operations with delay in the range of 40 to 60 seconds per vehicle. These high delay values generally indicate poor signal progression, long cycle lengths and high V/C ratios. Vehicles frequently fail to clear the intersection during the first green phase.

Corresponding delays usually range from 40.1 to 60.0 seconds.

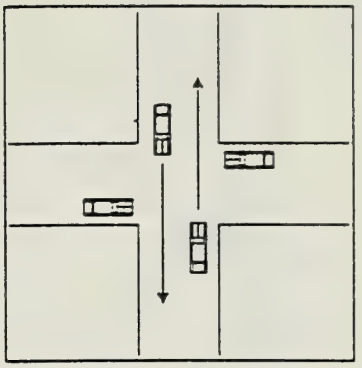
LEVEL OF SERVICE 'F' - V/C ratios greater than 1.00

Describes operations with delay in excess of 60 seconds per vehicle. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection.

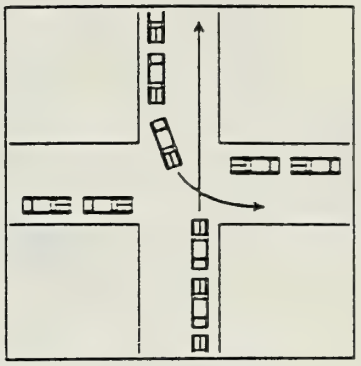
Corresponding delays of over 60 seconds are usually associated.

SOURCE: Transportation Research Board, *Circular 212*, "Interim Materials on Highway Capacity", 1980.

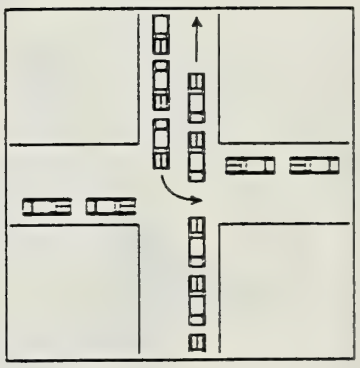
LOS-REV-11/1/95CRL



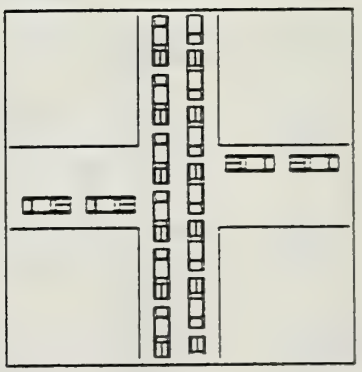
LOS 'A'



LOS 'C'

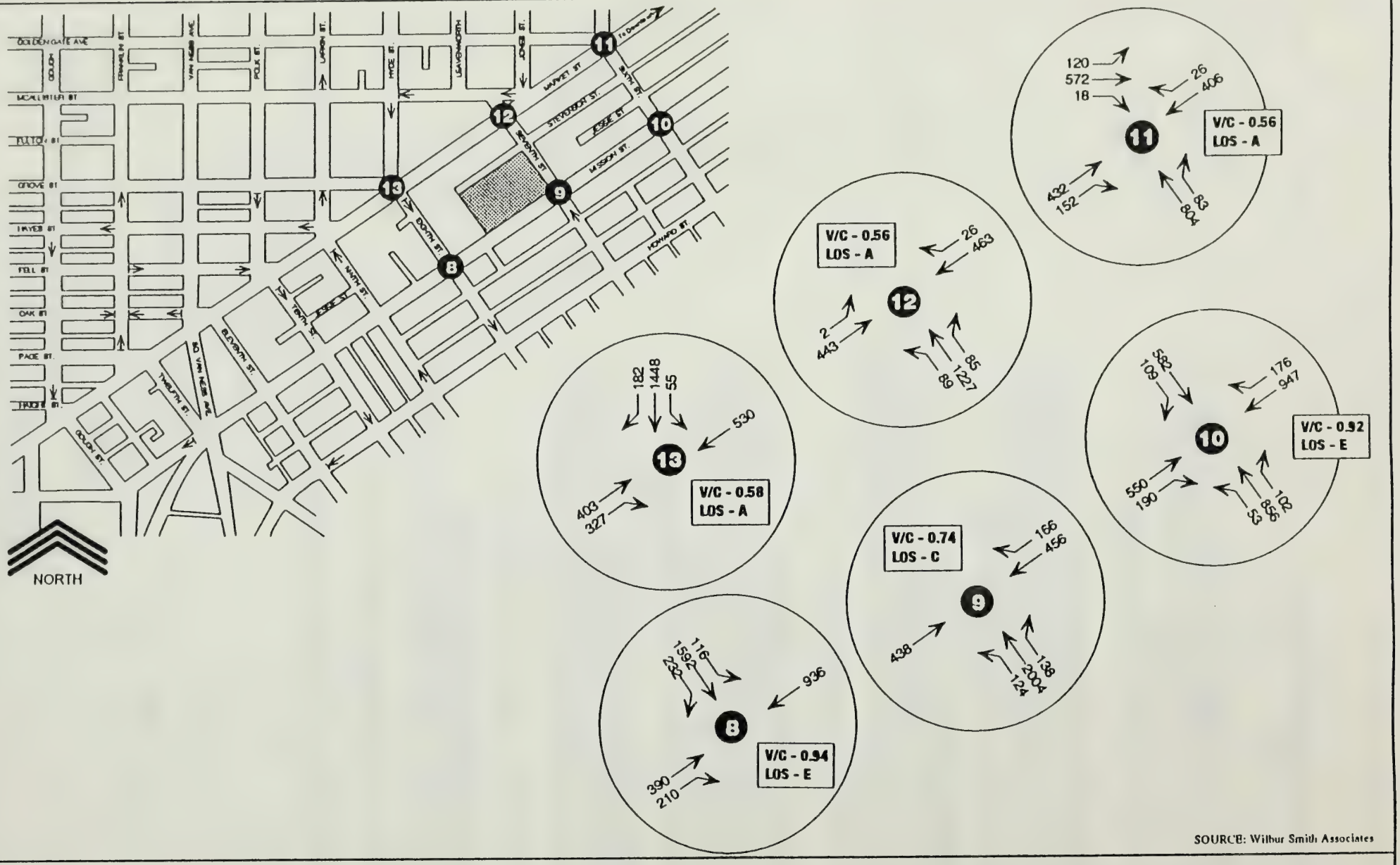


LOS 'D'



LOS 'F'

Figure F-3
Level of Service Concept Diagram

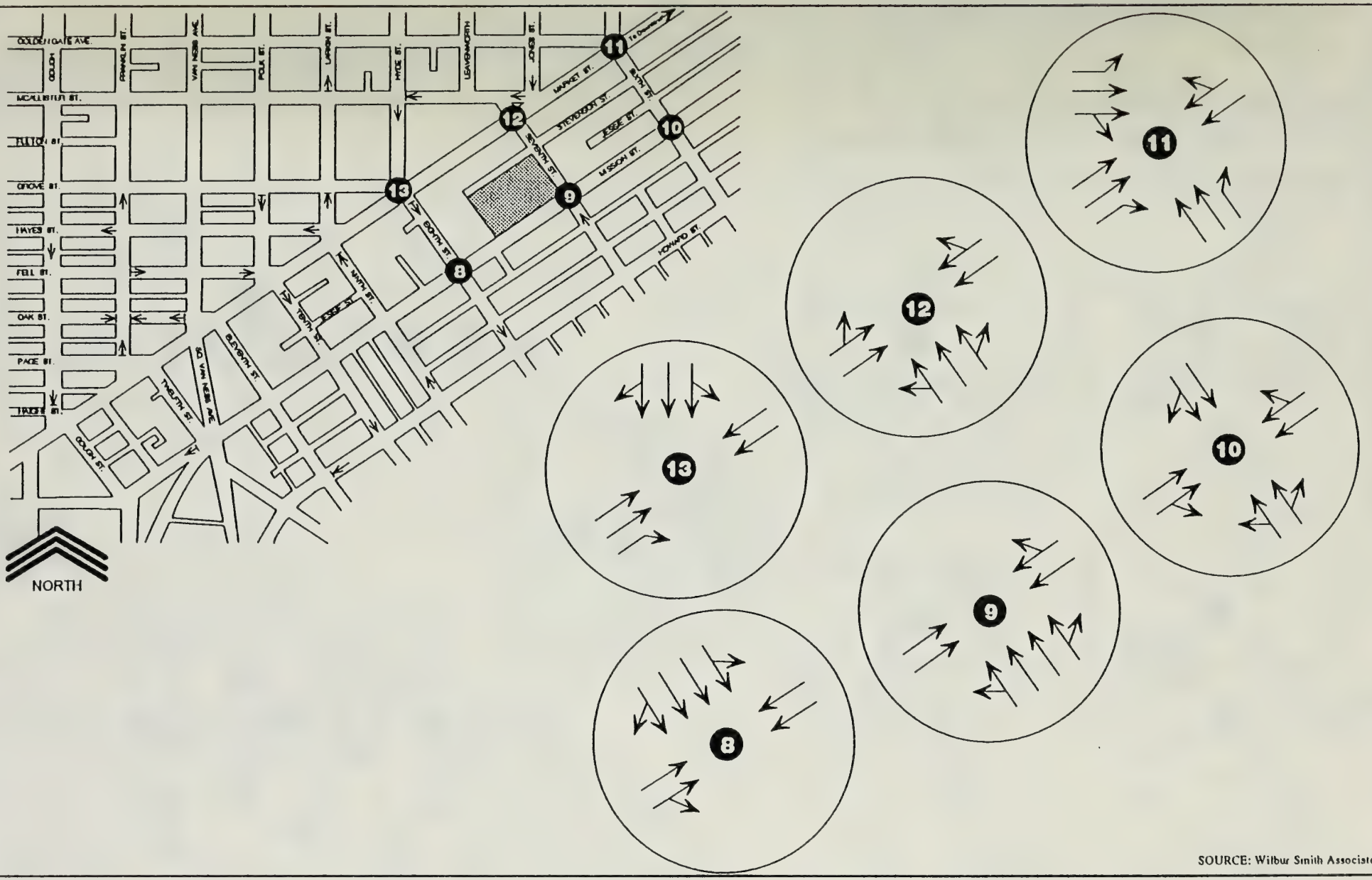


SOURCE: Wilbur Smith Associates

EXISTING PM PEAK HOUR VOLUMES
SEVENTH AND MISSION ALTERNATIVE

SAN FRANCISCO FEDERAL BUILDING
Environmental Impact Statement/Report

Figure F-4

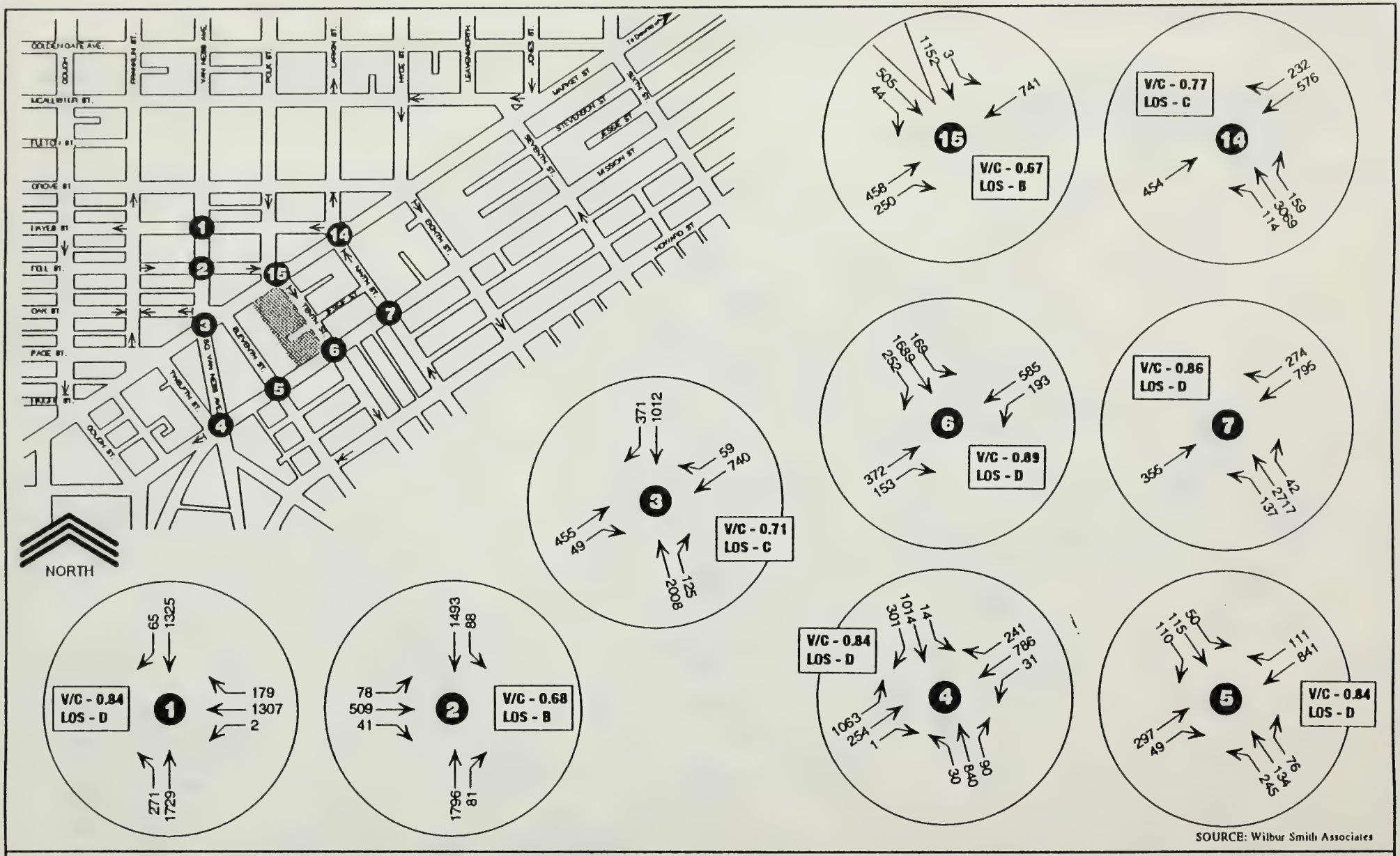


SOURCE: Wilbur Smith Associates

EXISTING STUDY INTERSECTION GEOMETRY
SEVENTH AND MISSION ALTERNATIVE

SAN FRANCISCO FEDERAL BUILDING
Environmental Impact Statement/Report

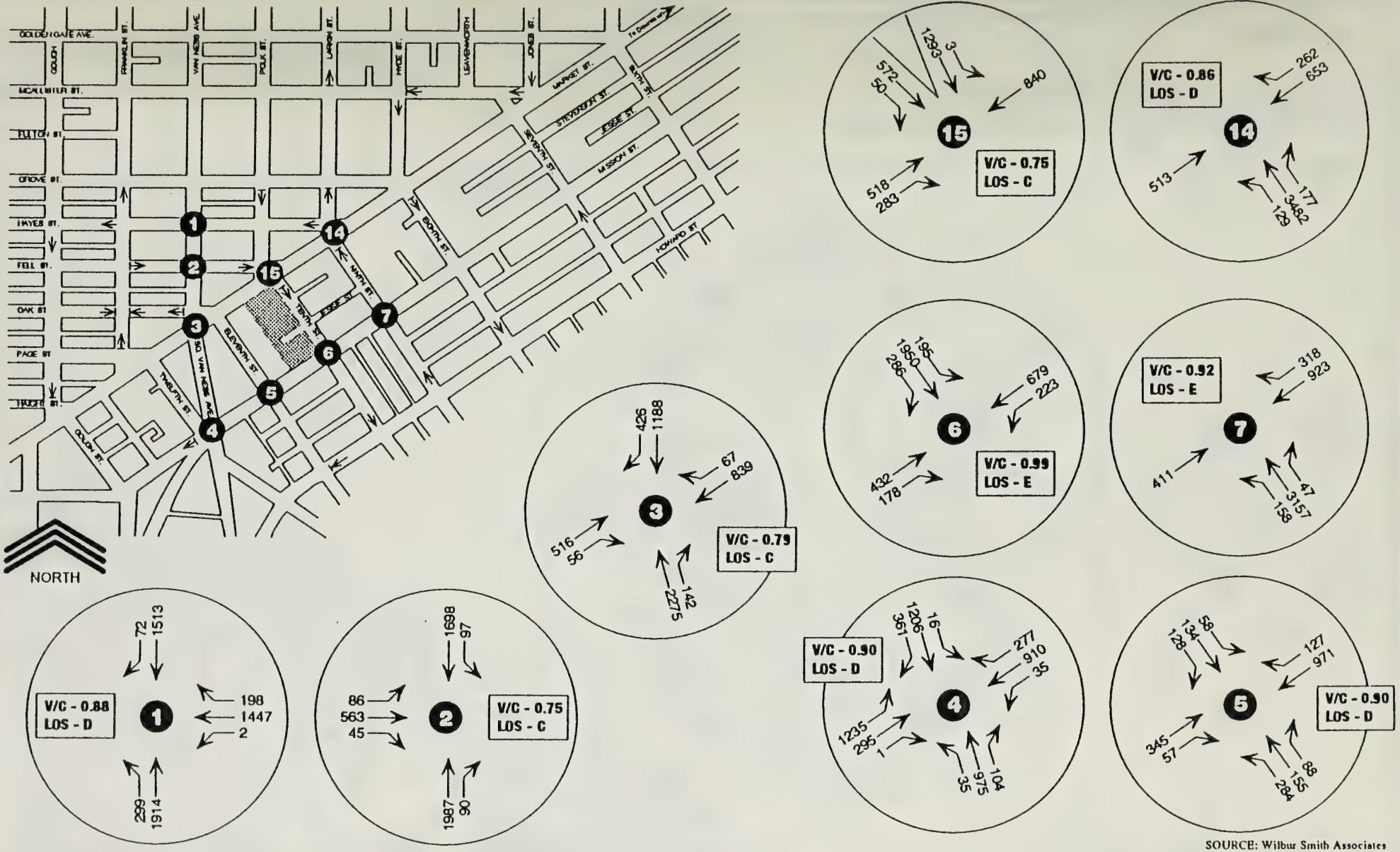
Figure F-5



EXISTING + PROJECT PM PEAK HOUR VOLUMES
TENTH AND MARKET ALTERNATIVE

SAN FRANCISCO FEDERAL BUILDING
Environmental Impact Statement/Report

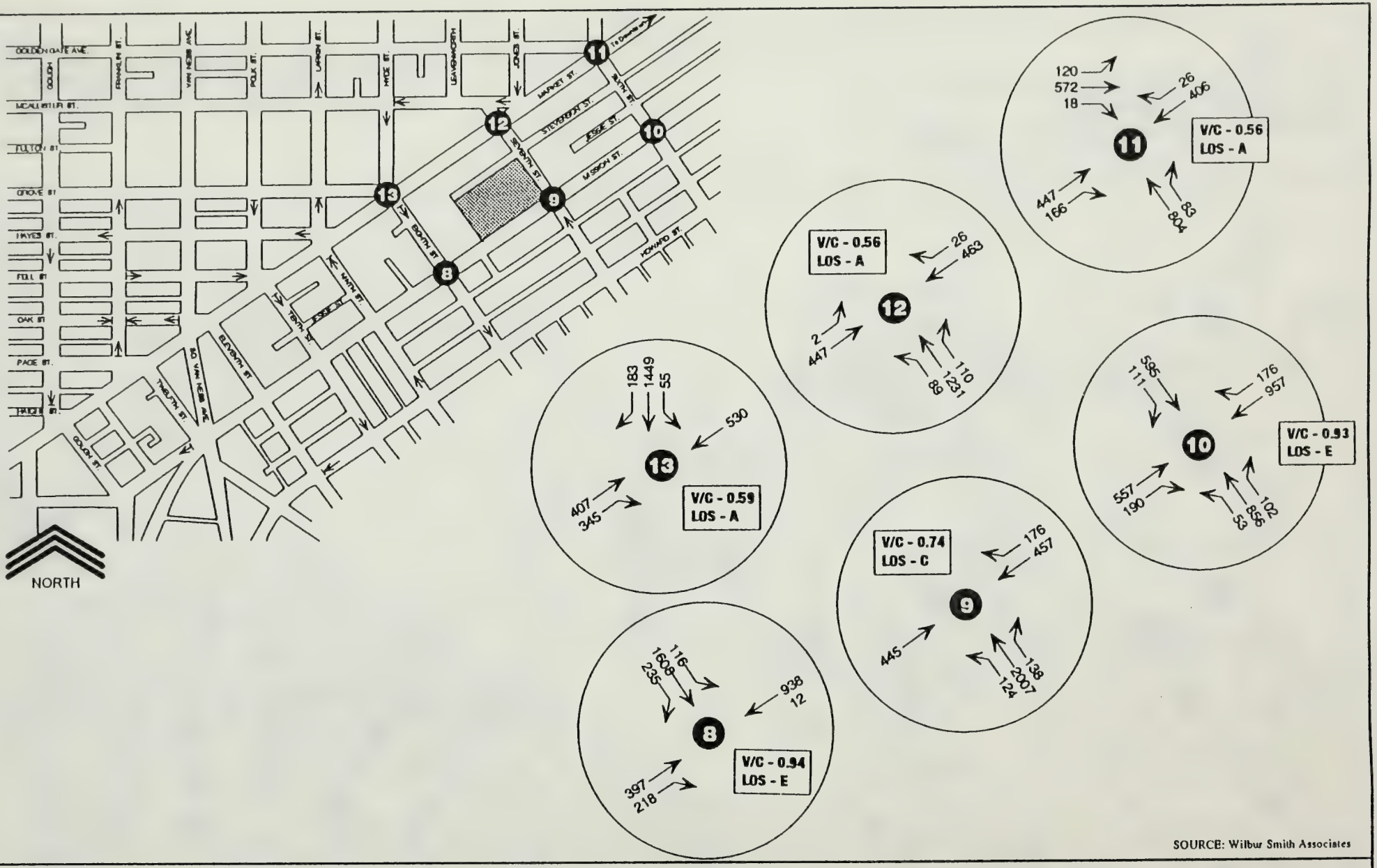
Figure F-6



SOURCE: Wilbur Smith Associates

YEAR 2010 + STATE BUILDING + PROJECT
PM PEAK HOUR VOLUMES
TENTH AND MARKET ALTERNATIVE
Figure F-7

SAN FRANCISCO FEDERAL BUILDING
Environmental Impact Statement/Report

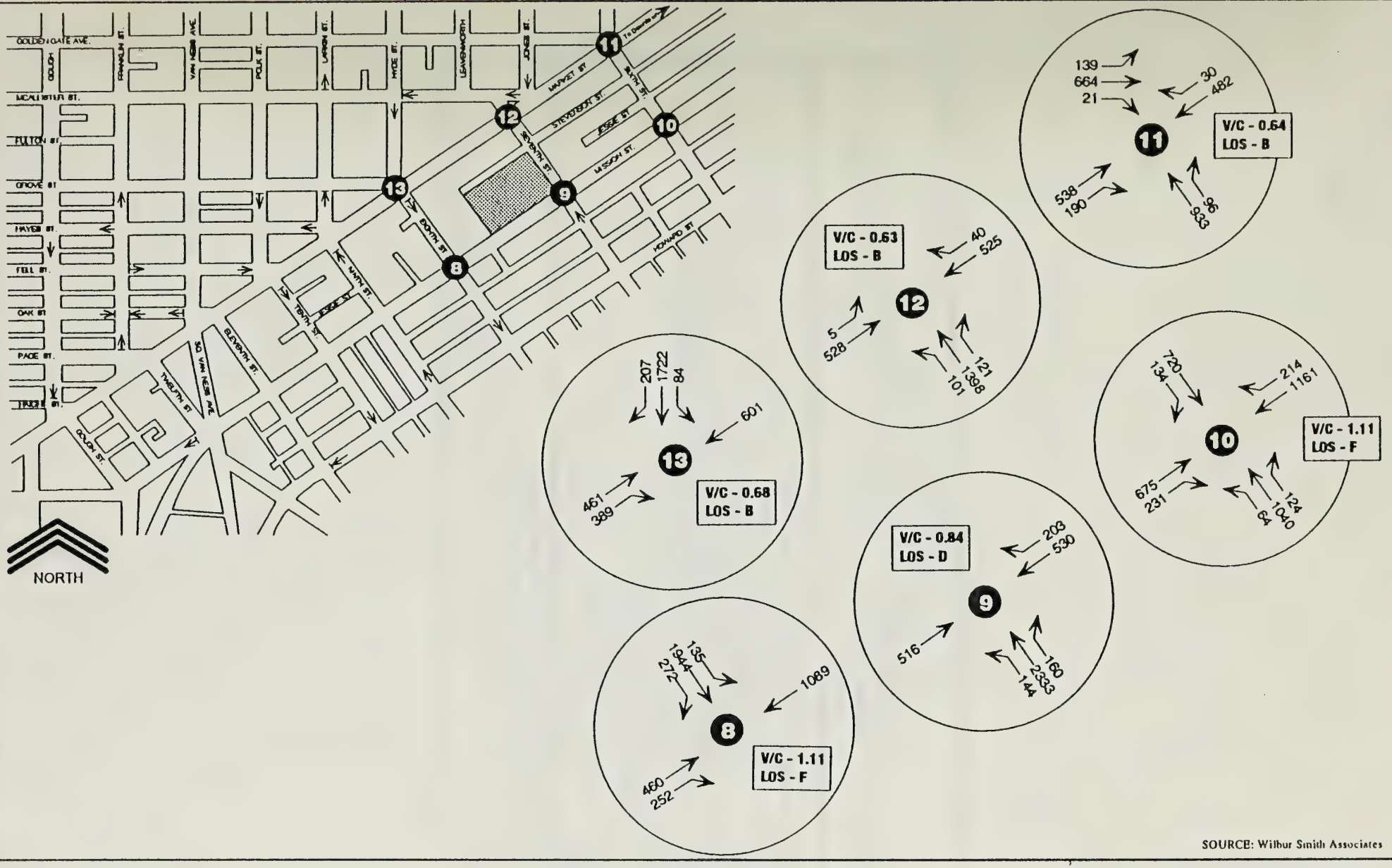


SOURCE: Wilbur Smith Associates

EXISTING + PROJECT PM PEAK HOUR VOLUMES
SEVENTH AND MISSION ALTERNATIVE

SAN FRANCISCO FEDERAL BUILDING
Environmental Impact Statement/Report

Figure F-8



SOURCE: Wilbur Smith Associates

YEAR 2010 + STATE BUILDING + PROJECT
PM PEAK HOUR VOLUMES
SEVENTH AND MISSION ALTERNATIVE
Figure F-9

TABLE F-1
PEDESTRIAN FLOW REGIMEN
NEW FEDERAL BUILDING EIR/EIS - SAN FRANCISCO

Flow Regime	Walking Speed Choice	Conflicts	Average Flow Rate[1]	LOS
Open	Free Selection	None	0.0 - 0.5	A
Unimpeded	Some Selection	Minor	0.51 - 2.0	A
Impeded	Some Selection	Indirect Interaction	2.1 - 6.0	B
Constrained	Some Restriction	Multiple	6.1 - 10.0	C
Crowded	Restricted	High Probability	10.1 - 14.0	D
Design Limit - Upper Limit of Desirable Flow				
Congested	All Reduced	Frequent	14.1 - 18.0	E
Jammed	Shuffle Only	Unavoidable	[2]	F

(1) Pedestrians per foot of sidewalk width per minute.
(2) For Jammed Flow, the (attempted) flow rate degrades to zero at complete breakdown.
Source: Pushkarev and Zupan, *Urban Space for Pedestrians. Highway Capacity Manual.*
Wilbur Smith Associates: April 1994

TRANSIT AND LOS DEFINITIONS/DESCRIPTIONS

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Table 1. Characteristics of Transit Vehicles

Type of Vehicle or Train	Length ft	Length m	Width ft	Width m	Typical Capacity[a] Seats	Standees	Total	Remarks
Minibus-short haul	19.5	5.95	7.7	2.35	18	12	30	
Transit bus	30.0	9.15	8.0	2.45	36	19	55	
	35.0	10.65	8.0	2.45	45	25	80	
	40.0	12.20	8.5	2.60	53	32	85	
Articulated transit bus	54.1	16.50	8.2	2.50	48	124	172	European model
	60.0	18.30	8.5	2.60	69	41	110	US specifications
Streetcar train	140.0	42.70	9.0	2.75	177	198	375	3-car P.C.C. train[b]
Light rail car train	220.0	67.00	8.9	2.70	204	366	570	3-car train, 6-axle car, US
	170.0	51.80	7.7	2.35	128	372	500	2-car train, 8-axle car, Europe
Rapid transit train	605.0	184.40	10.0	3.05	500	1,700	2,200	10-car train, New York IND
	600.0	182.90	10.3	3.15	616	2,000	2,616	8-car train, Toronto
	700.0	213.35	10.5	3.20	720	1,280	2,000	10-car train, BART, San Francisco

[a] In any transit vehicle the total passenger capacity can be increased (and passenger comfort decreased) by removing seats and making more standing room available, and vice versa.

[b] Presidents' Conference Cars.

Source: Ref. (29)

Table 2. Levels of Service for Bus Transit

Peak-Hour Level of Service	Passengers/Seat (Approximate)	Approximate ft.^{2}/Passenger
A	0.00 - 0.50	11.9 or more
B	0.51 - 0.75	11.8 - 8.0
C	0.76 - 1.00	7.9 - 6.1
D	1.01 - 1.25	6.0 - 4.8
E (Scheduled Load)	1.26 - 1.50	4.7 - 4.0
F (Crush Load)	1.51 - 1.60	< 4.0

(1 foot = .305 meter)

Table 3 indicates the peak period use of public transport, bus and rail combined, by persons entering the central business districts of selected cities in Canada and the United States (2). Transit carries more than two-thirds of all peak-hour travelers to or from the New York, Chicago, Philadelphia, and Toronto downtown areas, and more than a third of all peak hour travelers entering or leaving most other CBD's. The variations in transit use reflect variations in population, central business district employment, extent of bus and rail transit services, and geographic characteristics.

Table 4 presents bus use statistics for urban freeways (3). Buses carry over 85 percent of all peak hour person trips through the Lincoln Tunnel, account for about half of all peak hour travelers on the San Francisco–Oakland Bay Bridge, the Shirley Highway (Virginia), Ben Franklin Bridge (Philadelphia), and the Long Island and Gowanus Expressways (New York City), and for more than a quarter of all passengers on radial freeways in many other larger cities.

Buses carry an even higher proportion of peak hour travelers on city arterial streets as shown in Table 5. More than 85 percent of peak hour person trips on Hillside Avenue, New York City; State Street, Chicago; Market Streets in Philadelphia and San Francisco; and 14th Street and Pennsylvania Avenue in Washington, D.C., are on buses. Buses accommodate more than half of all peak-hour person-trips on downtown streets in many other cities (4).

Table 3. Peak Hour Use of Public Transit by Persons Entering or Leaving the Central Business District

Urban Area	Year	Percent by Public Transport
New York, NY	1974	90[a]
Chicago, IL	1974	82[a]
Toronto, ONT	1970	68[a]
Boston, MA	1974	49[a]
Ottawa, ONT	1974	44
Cleveland, OH	1970	44[a]
Vancouver, B.C.	1970	40
Los Angeles, CA	1974	37
Detroit, MI	1974	35
Denver, CO	1977	30
Washington, DC	1968	29[b]
Dallas, TX	1971	28
Milwaukee, WI	1974	25
Minneapolis, MN	1965	20
Houston, TX	1971	14

[a] With Rail Transit

[b] Includes Pentagon Area but prior to rail transit

Source: Cordon Counts for each city, compiled in Ref. (2)

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ON-STREET PARKING

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STUDY AREA I - NORTH OF MARKET ST.

SURVEY DATE: SEPEMBER 26, 1995 TUESDAY 10:00 AM - 1:30 PM

BLOCK	ON STREET METER										COLOR ZONE								PARKING RESTRICTION - FREE								TOTAL		
#	30 MI	OCCU	1 HR	OCCU	2 HR	OCCU	30 M.YL	OCCU	10hrM/C	OCCUP	YELLO	OCCU	WHITE	OCCU	GREEN	OCCU	BLUE	OCCU	1HR	OCCU	2HR	OCCU	ULM	OCCU	OTHER		SPACES	OCCU	
1*			8	5													1	0									9	5	55.6%
2*																											0	0	**
3*			23	14																							23	14	60.9%
4*																											0	0	**
5			18	4									11	7			4	0									33	11	33.3%
6	2	1	30	23							3	1					2	1									37	26	70.3%
7													12	0			2	0									14	0	0.0% ***
8			15	15			3	3									1	0									19	18	94.7%
9			39	27					2	11	2	0	4	0													47	38	80.9%
10	3	3	26	19			3	2	6	6			5	4			3	3									46	37	80.4%
11	2	1	10	10			3	2																			15	13	86.7%
13			29	27	26	25	5	3	2	1			3	3			3	2									68	61	89.7%
14	1	1	5	5			6	5			2	1	3	3			6	4									23	19	82.6%
18	2	2	3	2	6	5	4	3	6	6	2	0	1	1			1	1									25	20	80.0%
Subtotal	10	8	206	151	32	30	24	18	16	24	9	2	39	18	0	0	23	11	0	0	0	0	0	0	0		359	262	73.0%

* SOUTH SIDE OF THE BLOCK ONLY ** CONSTRUCTION AREA - NO PARKING *** CONSTRUCTION AREA-23 METER POLES W/O METER HEAD - NO PARKING SEP 18-OCT 18,95 OCCU = NUMBER OF OCCUPIED SPACES ULM = UNLIMITED PARKING SPACES

STUDY AREA 2 - SOUTH OF MARKET ST.

SURVEY DATE: SEPEMBER 18, 1995 MONDAY 11:30 AM - 2:30 PM

BLOCK	ON STREET METER										COLOR ZONE								PARKING RESTRICTION - FREE								TOTAL		
#	30 MI	OCCU	1 HR	OCCU	2 HR	OCCU	30 M.YL	OCCU	12HRMC	OCCUP	YELLO	OCCU	WHITE	OCCU	GREEN	OCCU	BLUE	OCCU	1hr PT	OCCU	CTPE	OCCU	ULM	OCCU	2hr PT	OCCU	SPACES	OCCU	
12			31	17			4	4			4	0	11	4													50	25	50.0%
15+16			36	27			5	1			3	2									18	3					62	33	53.2%
17			33	29			5	0			6	3					5	4	2	1			9	9			60	46	76.7%
19			21	11			1	1																			22	12	54.5%
20			26	8					20	8			5	2													51	18	35.3% *
21			29	14							13	5	2	2					16	14			64	61			124	96	77.4%
22	7	5	25	20			5	0			6	3	2	0					15	11					15	12	60	39	65.0%
23	2	2	48	27			11	0	16	7			1	0									16	16			94	52	55.3% **
24			40	26			6	1			13	8					1	1	37	29							97	65	67.0%
Subtotal	9	7	289	179	0	0	37	7	36	15	45	21	21	8	0	0	6	5	70	55	18	3	89	86	15		620	386	62.3%
TOTAL Area 1&2	19	15	495	330	32	30	61	25	52	39	54	23	60	26	0	0	29	16	70	55	18	3	89	86	15	0	979	648	66.2%

1hr PT = 1hr Parking except with permit "U" OCCU = NUMBER OF OCCUPIED SPACES
2hr PT = 2hr Parking except with permit "U" ULM = UNLIMITED PARKING SPACES
M/C = MOTORCYCLE PARKING SPACES CTPE - CITY PARKING PERMIT ONLY

* CONSTRUCTION AREA 20 METERS NOT INCLUDED
** UNLIMITED SPACES- 4 OF THEM ARE METER SPACES BECAUSE CONSTRUCTION JUST FINISHED, AND 4 METER POLES ARE THERE.

First column within each pair is total number of spaces.
Second column within each pair is total number of occupied spaces.

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APPENDIX G

PHASE I, 10TH & MARKET

BASELINE

ENVIRONMENTAL CONSULTING

4 August 1993
91315-HO

Mr. William Nakamura
San Francisco Redevelopment Agency
770 Golden Gate Avenue
San Francisco, California 94102

Subject: Draft Phase I Site Assessment for Tenth and Market Streets, San Francisco

Dear Mr. Nakamura:

BASELINE is pleased to submit two copies of the Draft Phase I Site Assessment report conducted for the Tenth and Market streets property in San Francisco. We look forward to receiving your comments on this draft. Please do not hesitate to contact us should you have any questions.

Sincerely,

Yane Nordhav

Yane Nordhav
Principal
Reg. Geologist No. 4009
Env. Assessor No. 722

Dominic Roques
Associate

YN:DR:tt
Enclosure

91315H0.ph1-8/4/93

5900 Hollis Street, Suite D • Emeryville, CA 94608 • (510) 420-8686 • FAX (510) 420-1707
Emeryville *Petaluma*

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PHASE I SITE ASSESSMENT

AUGUST 1993

TENTH AND MARKET STREETS
BLOCK 3507, PARCELS 3-6, 9, 30, 34, 37
San Francisco, California

For:

San Francisco Redevelopment Agency
San Francisco, California

BASELINE Environmental Consulting
5900 Hollis Street, Suite D
Emeryville, California 94608
(510) 420-8686

91315-H0

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PHASE I SITE ASSESSMENT
TENTH AND MARKET STREETS, BLOCK 3507, PARCELS 3-6, 9, 30, 34, 37

BACKGROUND

This report provides the results of a Phase I Site Assessment for the property located near Tenth and Market streets in the City and County of San Francisco, California (Figure 1). The purpose of the site assessment was to determine the potential for hazardous materials to be present above ground or in the subsurface of the site, by examining 1) current and past land uses on-site and on adjacent properties, and 2) known releases of hazardous materials on-site or within one block of the site.

The scope of work for this project included review of historical land use records including Sanborn fire insurance maps, City of San Francisco Polk Directories, and aerial photographs; review of regulatory agency records; review of available geologic information; site and building reconnaissance; and development of recommendations for further actions. Evaluation of the presence of asbestos-containing materials in the on-site structures was not part of this assessment. This Phase I Site Assessment has been conducted in accordance with the Standard Practice E 1527-93 of the ASTM.

SITE LOCATION

The site is located on the eastern half of the city block in downtown San Francisco bounded by Market, Mission, Tenth, and Eleventh streets (Figure 2). Jessie Street enters the block from Tenth Street and does not continue past a point approximately midway through the block. The site consists of Assessor Parcels 3, 4, 5, 6, 9, 30, 34, and 37 on Block 3507. Topography at the site and site vicinity is generally level, sloping slightly to the south-southeast.

SITE RECONNAISSANCE

BASELINE conducted a site reconnaissance on 14 and 22 July 1993 to identify current land uses potentially associated with the use of hazardous materials on-site and in areas adjacent to the site. Below is a description of observations made on those dates.

On-Site Land Uses

Six buildings of two and four stories in height cover approximately 50 percent of the site; parking and vacant areas occur on the remainder of the site (Figure 2). The buildings are partially under retail and commercial uses and partially vacant. Tenants occupying the office buildings lease space from the property owner, Bank of America. Retail and office spaces fronting on Market Street, include restaurants, copy and typesetting shops, shoe repair, a bar, a clothing store, and a photo-processing service. Offices of non-profit organizations, a direct-mail operation, a data processing service, and vacant offices front on Tenth Street. A ceramic workshop operated by one non-profit organization was observed on the second floor of the building at 20 Tenth Street (Figure 2).

REGIONAL LOCATION

Figure 1

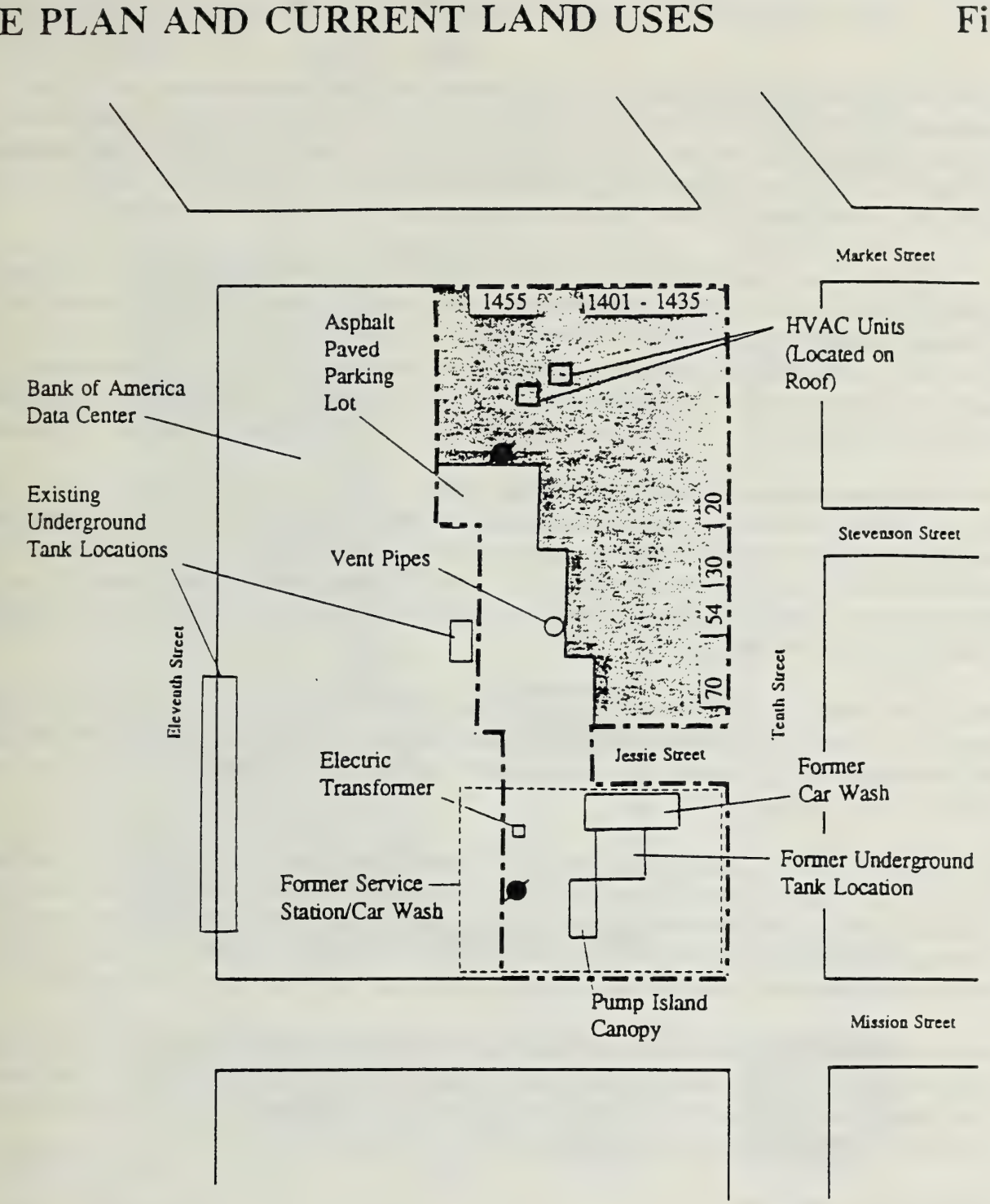


Tenth and Market Streets
San Francisco, California

BASELINE

SITE PLAN AND CURRENT LAND USES

Figure 2



Legend

Area Covered by Two-and Four-Story Buildings

Project Site Boundary

Drum Storage Area

0 130 Feet

Tenth and Market Streets
San Francisco, California

BASELINE

Offices above the ground floor of the on-site buildings were predominantly vacant at the time of the reconnaissance. BASELINE observed carpeted office suites containing acoustic ceiling panels, and fluorescent lights in most vacant offices. Vinyl floor tiles were observed in portions of the buildings at 30 and 70 Tenth Street (Figure 2). Several cans of paint, floor wax, and floor wax stripper were stored in a storage room in one of the vacant office suites at 20 Tenth Street (Figure 2).

Two 55-gallon drums were located in a covered area adjacent to the parking lot and behind the buildings which front on Market Street (Figure 2). One drum was labeled Synosol, but was believed to contain Trichloroethylene (TCE), a solvent (Ramos, 1993); the second drum had no label. The drums were placed in this location after appearing on a portion of the parking lot approximately two years ago (Ramos, 1993). The drums were on a paved surface with no secondary containment. BASELINE observed no evidence of leakage from the drums at the time of site reconnaissance.

The southeastern portion of the site at the corner of Tenth and Mission streets (Figure 2) was vacant but was formerly occupied by a service station and carwash. The former carwash facility was fenced and could not be entered during the site reconnaissance. A canopy over the former locations of fuel dispenser islands were still on-site (Figure 2). Five 55-gallon drums, storing material generated during previous subsurface investigations on-site, were located along the fence at the western edge of the former carwash area.

Jessie Street leads to an asphalt-paved parking lot at the center of the block. Two metal vent pipes attached to a three-story building fronting on Tenth Street were identified by BASELINE during the site reconnaissance. The vents are associated with two underground storage tanks[1] located on the adjacent property (Figure 2).

Heating, air conditioning, and ventilation (HVAC) equipment, located on the roof of the buildings at 1435 and 1455 Market Street (Figure 2). This equipment requires chemical treatments of feed water at regular intervals; anti-corrosion and anti-bacterial chemicals used in these treatments were located in storage areas adjacent to the boiler and cooling units. The project engineer for Bank of America maintains MSDS forms for all chemicals used in operating the HVAC units (Ramos, 1993).

An electric transformer, identified in site plan figures in previous reports (Converse, 1992a), is located at the western edge of the area formerly used as a service station/carwash (Figure 2). The presence of the transformer could not be confirmed during the site reconnaissance since access to that portion of the site was prevented by a locked fence.

Surrounding Land Uses

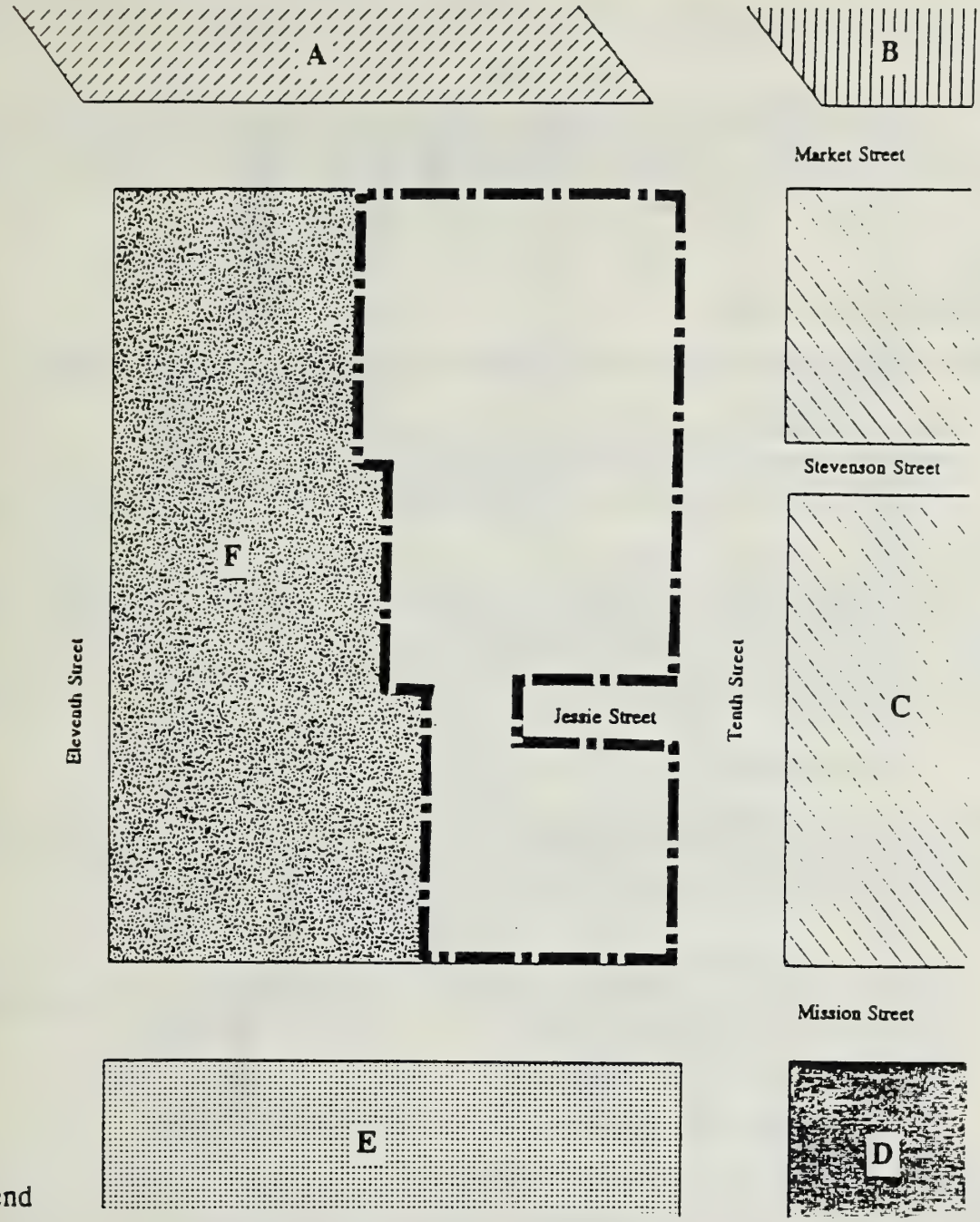
Surrounding land uses were recorded during the site reconnaissance in July 1993. Surrounding land uses are commercial, and include retail, offices, restaurants, and a hotel in Areas A and B (Figure 3); a parking garage containing an out-of-service pump island, the furniture trade mart, offices, and a restaurant in Area C; a parking lot in Area D; a tires sales and service center, a business college,

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[1] The off-site tanks each have a 10,000-gallon capacity and store gasoline for the fleet of courier vehicles operated by the Bank of America; fuel dispensers are located in the subgrade portion of the Bank of America Data Center located west of the project site.

ADJACENT AREAS STUDIED FOR HISTORICAL AND CURRENT LAND USES

Figure 3



Legend

Area		Addresses	
A		1400-1498	Market Street (Even)
B		1350-1398	Market Street (Even)
C		1351-1399	Market Street (Odd)
		1-99	Tenth Street (Odd)
		855-900	Stevenson Street (All)
D		101	Tenth Street
E		1401-1499	Mission Street (Odd)
F		1-99	Eleventh Street (Odd)
		1435-1499	Market Street (Odd)
		1492-1498	Mission Street

Project Site Boundary

Tenth and Market Streets
San Francisco, California

0 130 Feet

BASELINE

parking, a city tow-yard (impounded vehicle storage) in Area E; and the Bank of America office building, with a courier vehicle fleet stationed in the basement in Area F.

Current surrounding land uses potentially associated with hazardous materials are located in Areas C, D, E, and F and include the parking garage and lot, the tire store, the tow-yard, and the courier fleet operation. Petroleum hydrocarbons, volatile organic compounds, metals, and oil and grease are potentially associated with these land uses.

HISTORICAL LAND USES

BASELINE reviewed the following sources to determine historic land use at and adjacent to the site:

- Sanborn Insurance Maps from 1899, 1913, 1948-49
- Aerial photographs from 1935, 1948, 1955, 1961, 1972, 1979, 1985
- Polk Street Index Directories from 1953, 1957, 1960, 1964-65, 1969-70, 1975, 1980

The historical land uses indicated by these sources and the potential contaminants that may have been associated with identified land uses are summarized in Table 1. Sanborn maps from 1899, 1949, and 1913 are shown in Figures 4, 5, and 6. Aerial photographs from 1948, 1961, and 1991 are shown in Figures 7, 8, and 9. These figures illustrate land use change over time and show location of land uses associated with hazardous materials.

On-Site

Early on-site land uses included industrial, commercial, and residential uses. Sometime after the 1930s commercial land uses, such as retail sales and offices, increased (Table 1). Potential contaminants of concern associated with land uses on-site include the following:

- Creosote - sometimes associated with lumberyard activities
- Petroleum products - auto dealerships, repair, service stations, and parking facilities
- Solvents - auto painting, auto repair
- Metals - auto painting, paint pigments

Off-Site

Off-site land uses included industrial, commercial, residential, and recreational uses until the 1980s. Off-site land uses in the 1980s were dominated by offices, retail, and commercial services (Table 1). Potential contaminants of concern associated with off-site land uses include the following:

- Petroleum products - oil storage, auto repair, service stations, parking facilities, commercial manufacturing
- Solvents - printing, machine shop, paint, auto repair
- Metals - printing, paint, machine shop, iron works, aluminum fabricator
- PNAs - wood coal and oil storage



Legend

Project Site Boundary

Approximate

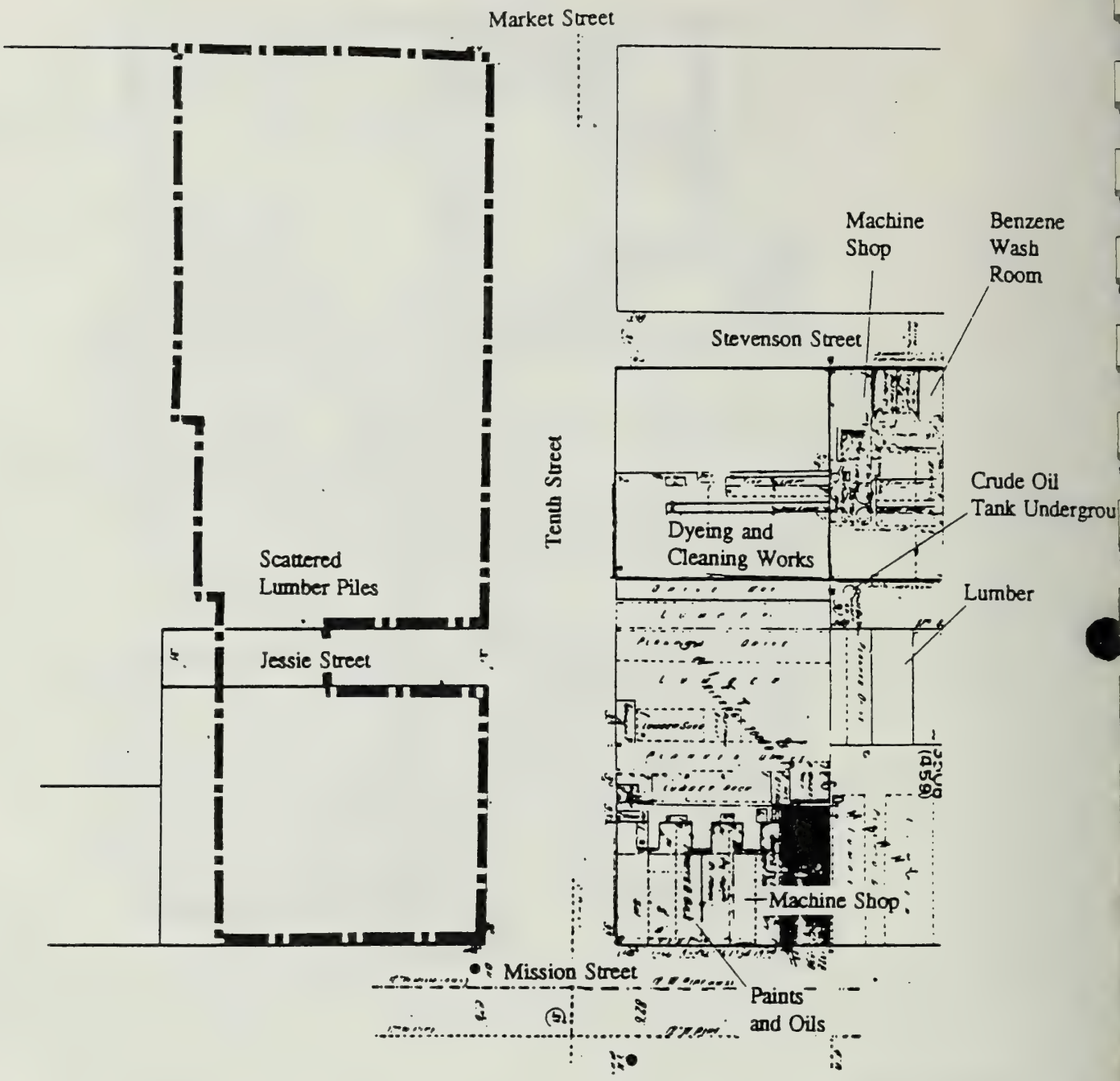
0 100 Feet

Tenth and Market Streets
San Francisco, California

BASELINE

SANBORN MAP - 1913

Figure 5

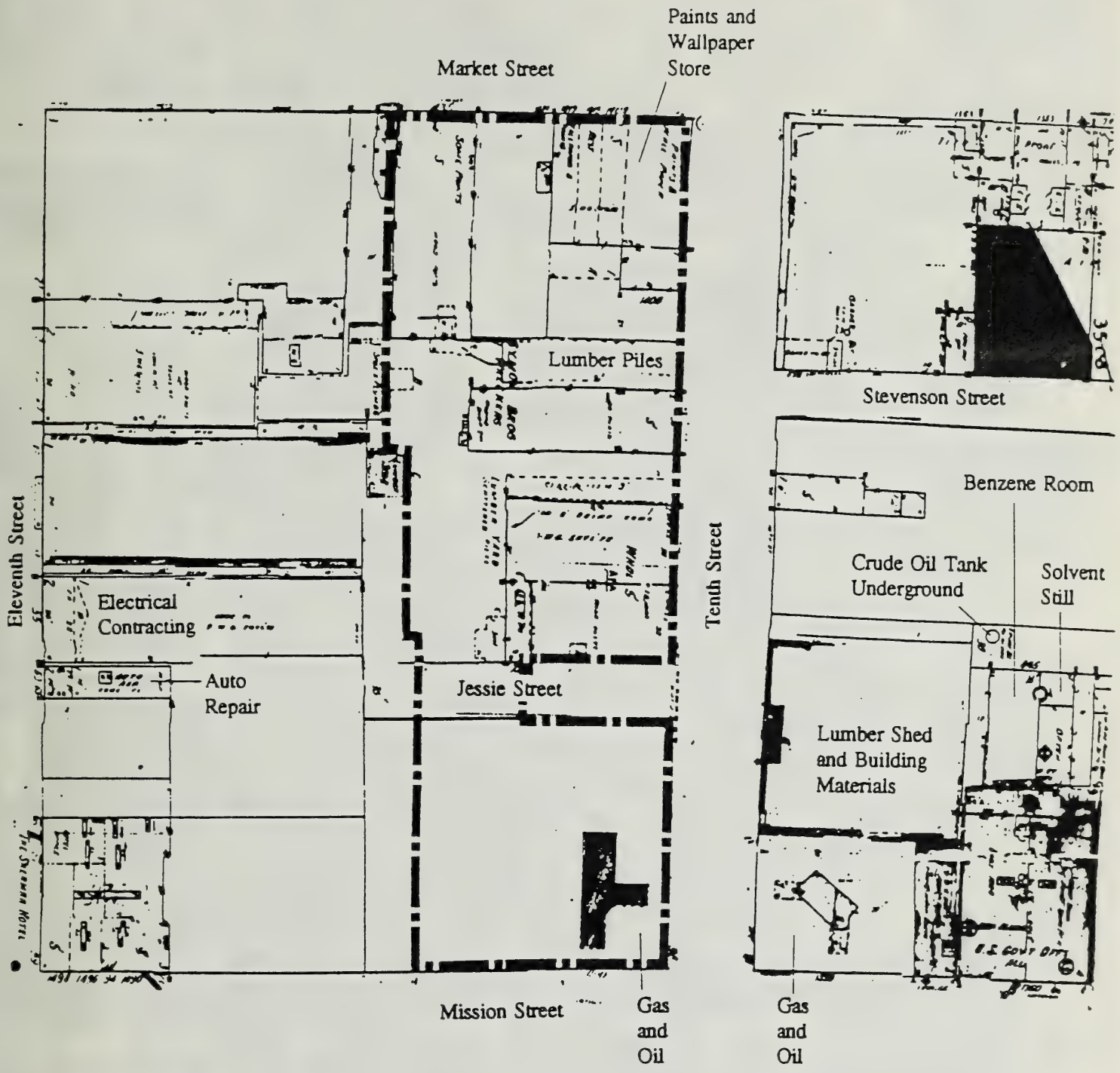


Tenth and Market Streets
San Francisco, California

BASELINE

SANBORN MAP - 1949

Figure 6

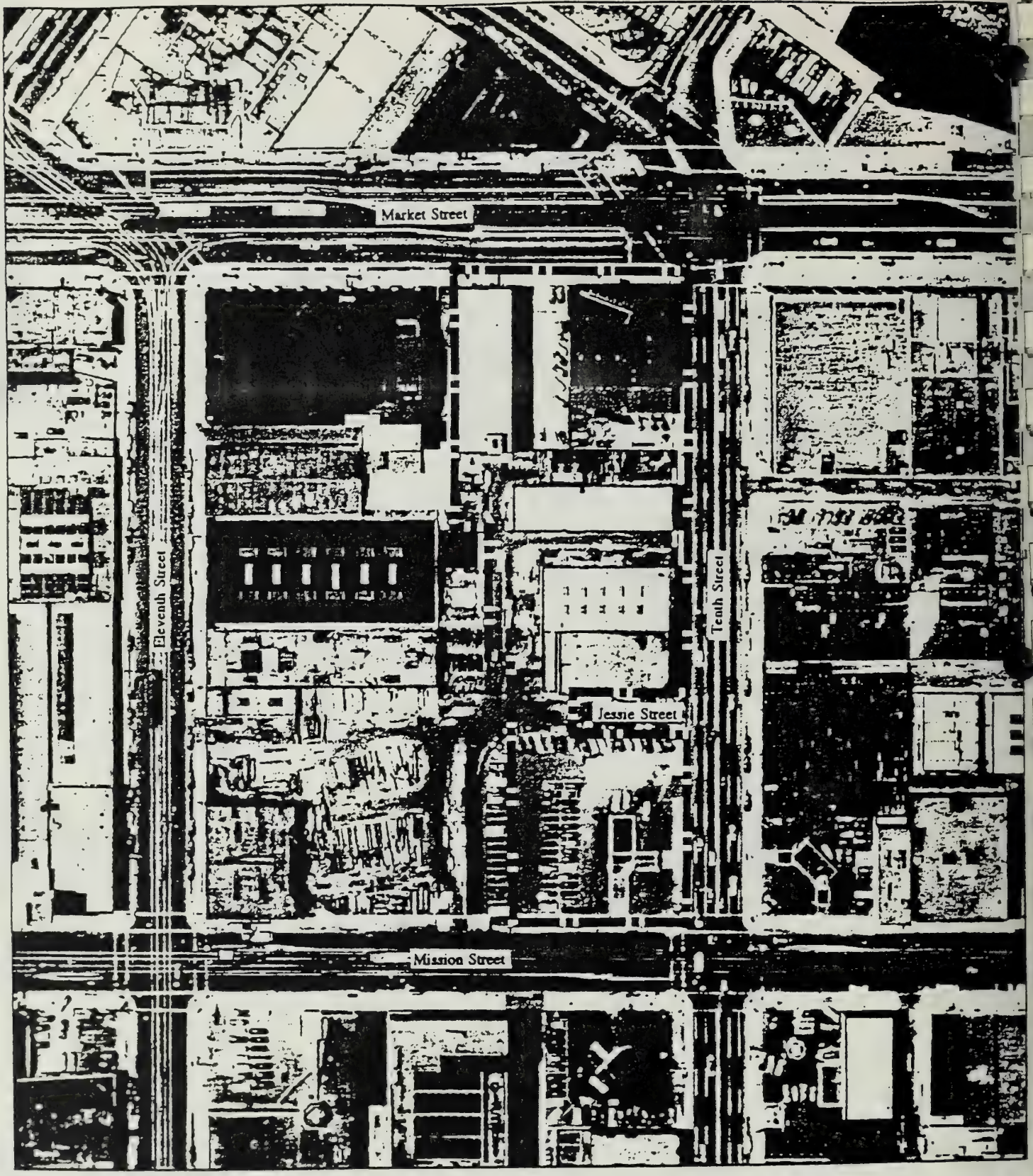


Tenth and Market Streets
San Francisco, California

BASELINE

AERIAL PHOTOGRAPH - 1948

Figure 7



Legend

Project Site Boundary

Approximate

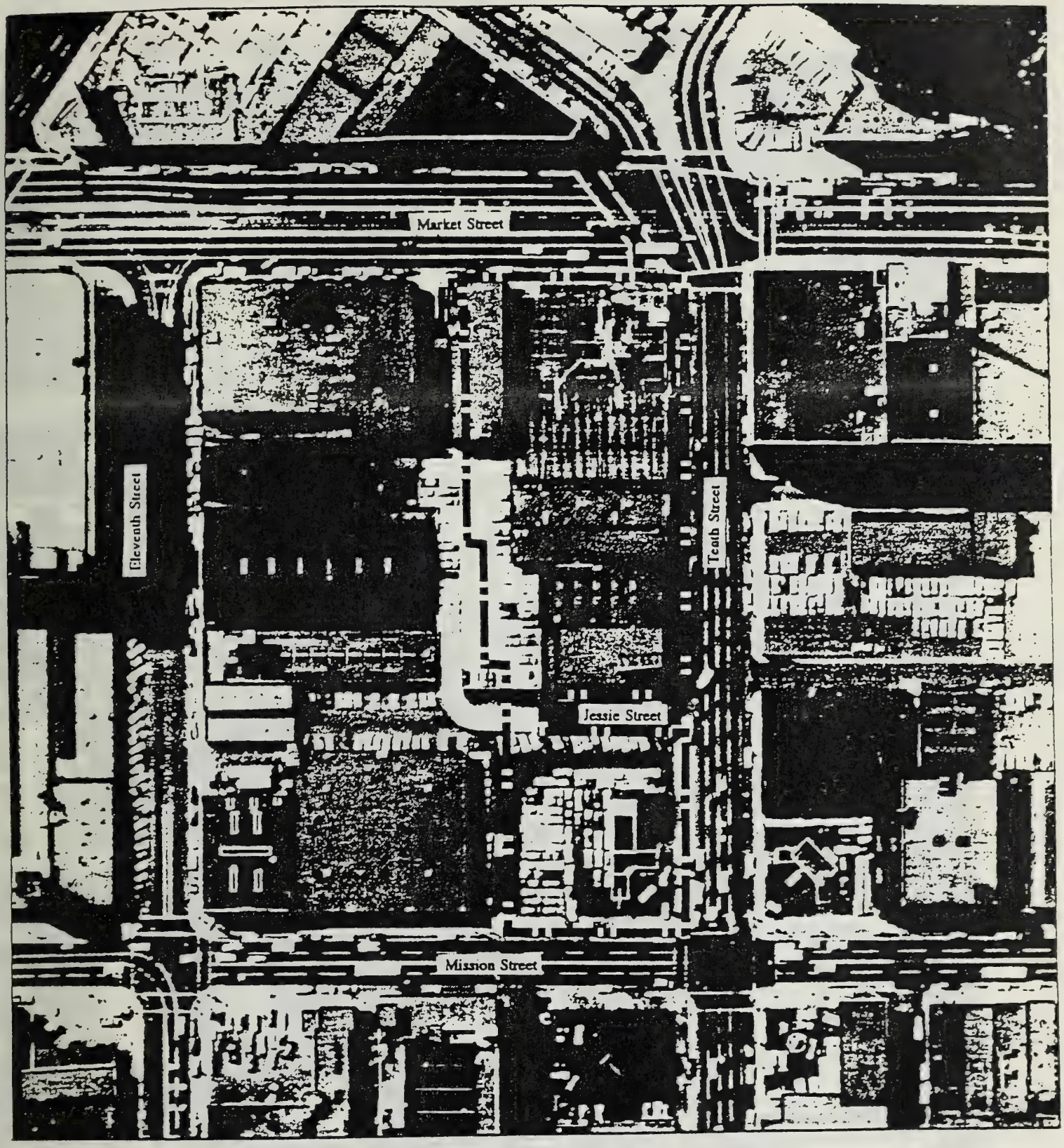
0 120 Feet

Tenth and Market Streets
San Francisco, California

BASELINE

AERIAL PHOTOGRAPH - 1961

Figure 8



Legend

Project Site Boundary

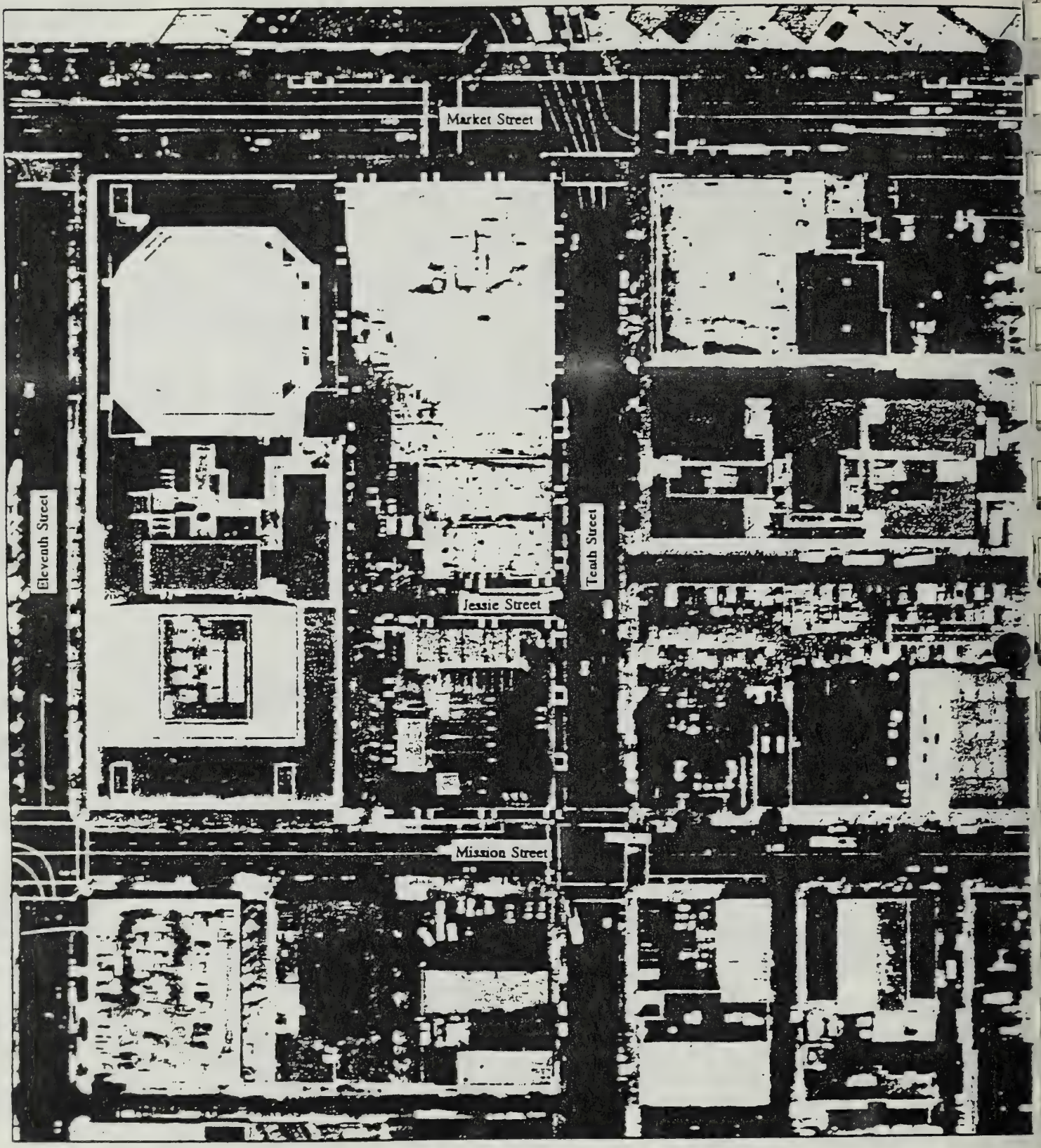
0 120 Feet

Tenth and Market Streets
San Francisco, California

BASELINE

AERIAL PHOTOGRAPH - 1991

Figure 9



Legend

Project Site Boundary

Approximate

0 120 Feet

Tenth and Market Streets
San Francisco, California

BASELINE

TABLE 1

SUMMARY OF HISTORICAL LAND USES
10th and Market Streets
San Francisco, California

Period	Source	On-Site Land Uses	Potential Contaminants On-Site	Off-Site Land Uses By Area[1]	Potential Contaminants Off-Site
1900s	Sanborn map (1899)	Fire station, lumber mill and storage, auto retail, auto painting, sash and door shop on northwestern and central portion; residences on southeastern portion.	Petroleum products, creosote, solvents, metals	A: stores, saloon, barber, horse wagon shed; B: stores, shirt factory, hotel; C: bicycle repair, saloon, offices, retail, stables, storage, dye works, typesetting; D: saloon, wood-coal and oil storage, lumber; E: saloons, stores for furniture, carpet, and wallpaper, residences; F: poster printing, glove factory, stores, saloon, church, brewery, residences, locksmith.	Petroleum products, solvents, metals, PNAs
1910s	Sanborn map (1913)	Scattered lumber piles.	Unknown	A: saloon, auto repair, paint stores, tin shop, motorcycle repair, hotel, restaurant, harness shop; B: cafe, restaurant, store, saloon; C: dyeing and cleaning, lumber, machine shop, paint and oils; D: second hand store; E: lumber shed, knitting mill, store, yarn storage, wagon repair, machine shop, iron works, restaurant, saloon; F: saloon, restaurant, stores, plumbing supply warehouse and retail, hotel.	Petroleum products, solvents, metals
1930s	Aerial Photograph (1935)	Buildings and storage areas with unknown uses.	Unknown	Buildings and storage areas with unknown uses.	Unknown
1940s	Sanborn map (1948-49) Aerial Photograph (1948)	Paint and wallpaper store, restaurant, wrecking on northwestern portion; lumber yard on center; service station on southeastern portion	Petroleum products, metals	A: stores, restaurant, office, hotel; B: theater; C: furniture mart, parking, lumber, building materials warehouse, service station; D: service station, store; E: service station, repair shop, knitting mill, store, yarn storage, tire sales and service; F: shipping and crating, auto sales and storage, bowling alley, electrical contractor, auto repair, hotel, lumber storage.	Petroleum products, solvents, metals

Table 1 - *continued*

Period	Source	On-Site Land Uses	Potential Contaminants On-Site	Off-Site Land Uses By Area[1]	Potential Contaminants Off-Site
1950s	Polk Directories (1953, 1957) Aerial Photograph (1955)	Paint store, retail stores, restaurant, rental center, used cars on northwestern portion; service station (possible auto repair) on southeastern portion.	Petroleum products, metals	A: retail stores, hotel, restaurants, taverns; B: theater, retail stores, restaurant, barber shop, jewelry repair, doctor's office, cocktail lounge, parking; C: furniture showroom/trade mart, auto garage, retail store, telegraph, office, uniform manufacturing, restaurant, parking; D: service station, auto repair; E: manufacturing of unknown product, tire store; F: wreckers, driving school, retail stores, car dealer, aluminum fabricator, glass company, cosmetic manufacturer, tool manufacturer, cafe, hotel, offices, furniture warehouse.	Petroleum products, solvents, metals
1960s	Polk Directories (1960, 1964-65) Aerial Photograph (1961)	Restaurant, retail stores, offices under construction on northwestern portion (1960); parking structure, surface parking, service station, shoe repair, auto services, tavern, service station on southeastern portion.	Petroleum products	A: retail stores, hotel, barber, restaurants, taverns, offices; B: theater, jeweler, office, tavern, retail store; C: trade mart, auto repair, telegraph, garden supply, typewriter repair, parking, office, retail store; D: service station; E: manufacturing of unknown product, offices, tire store, service station, parking; F: offices, driving school, retail stores, shipping facility, glass company, auto repair, cosmetic manufacturer, tool manufacturer, uniform manufacturer, cafe, hotel, restaurant.	Petroleum products, solvents
1970s	Polk Directories (1969-70, 1975) Aerial Photographs (1972, 1979)	Shoe repair, retail stores, offices, restaurants, tavern on northwestern portion; parking, service station on southeastern portion; parking structure on northwest and central portions.	Petroleum products	A: retail stores, hotel, barber shop, restaurant, taverns, office; B: office/apartment building/ parking garage; C: telephone service outlet, trade mart, auto repair/garage, typewriter repair, telegraph; D: service station; E: offices, tire store; F: barber shop, service maintenance school, auto repair, ice skating, cosmetic manufacturer, glass company, uniform manufacturer, tool manufacturer, offices, hotel, area under construction (1975).	Petroleum products, solvents

Table 1 - *continued*

Period	Source	On-Site Land Uses	Potential Contaminants On-Site	Off-Site Land Uses By Area[1]	Potential Contaminants Off-Site
1980s	Polk Directory (1980) Aerial Photograph (1985)	Offices, shoe repair, restaurant, tavern on northwest portion; service station southeast portion.	Petroleum products	A: retail stores, hotel, restaurant, taverns, office; B: office/apartment building/parking garage; C: parking, trade mart; D: service station; F: offices, retail.	Petroleum products

[1] Refer to Figure 3 for area locations.

PREVIOUS INVESTIGATIONS ON-SITE AND ADJACENT TO SITE

Bank of America is the owner of the project site and the adjacent site to the west (Figure 3). Soil and groundwater investigations associated with Bank of America's underground tank replacement program began in October of 1990. These investigations (Converse West, 1992a) have been undertaken for the tanks formerly located in the southern portion of the project site as well as for existing off-site tank locations at the adjacent site (Figure 2).

On-Site

Four 10,000-gallon underground tanks were removed in 1992 (Converse, 1992a). As part of the tank removal activities, soil samples were collected from the tank pit and from below the pump islands. Soil samples collected during the excavation of four 10,000-gallon gasoline tanks and associated piping and pump islands contained gasoline and volatile organic compounds (VOCs); up to 94 mg/kg of gasoline and up to 0.220 mg/kg of BTXE were detected in soil samples collected from beneath the pump islands; xylenes (0.0083 mg/kg) were detected from the tank excavation area following tank removal (Table 2 and Figure 10).

Three monitoring wells (MW-2, MW-3, and MW-4) were constructed on-site in October of 1990 (Figure 10). Analytical results indicated the presence of VOCs in soil samples from MW-3 and MW-4 (up to 0.026 mg/kg) in soil samples from ten and fifteen feet below ground surface (Table 2).

Analytical results from the groundwater monitoring wells on-site between October 1990 and March 1993 indicate the presence of VOCs, diesel, and an unidentified hydrocarbon compound in the groundwater. The initial analysis (October 1990) of on-site monitoring wells indicated the presence of VOCs (Table 2); subsequent analyses, in March, June, September, and December 1991; March, June, and December 1992; and March 1993, did not identify VOCs above the levels of detection. Diesel was detected at 0.59 mg/L in March 1992 at MW-2, and a hydrocarbon compound was detected in MW-2 and MW-3 at 0.05 and 0.11 mg/L, respectively, subsequent to the September 1992 sampling event; the identity of the compound was not confirmed by the laboratory.

There is no known source of diesel on-site; diesel in groundwater at MW-2 may have an off-site, upgradient source, or it may be from an unknown source on-site. The VOC-containing soil samples at the site were from 10 and 15 feet below the ground surface, near the groundwater interface and not from the shallow soil column; the VOCs in the soil may be related to VOCs volatilizing from the groundwater.

Off-Site

Five soil borings and nine monitoring wells were constructed on the adjacent site (Figure 10) between November 1990 and March 1992. The groundwater flow direction, estimated by Converse (1992a), indicates that these soil borings and wells are cross-gradient from the project site.

Groundwater from the adjacent site contained up to 0.36 mg/L gasoline and VOCs at up to 0.018 mg/L during November 1990 and March 1992 sampling events. A hydrocarbon compound similar to diesel, but not confirmed as diesel, was detected at 0.13 mg/L in one monitoring well.

TABLE 2

SUMMARY OF ANALYTICAL RESULTS OF
PREVIOUS ON-SITE INVESTIGATIONS
SOIL AND GROUNDWATER[1]
OCTOBER 1990 - MARCH 1993
Tenth and Market Streets
San Francisco, California

SOIL				
Location	Date	Contaminant	Concentration (mg/kg)	Depth (feet)
Tank Pit (3-5)[2]	1/91	Xylenes	0.0083	Base of tank excavation
Pump Island #12[2]	1/91	TPH-g Benzene Ethylbenzene Toluene Xylenes	1.5 0.020 0.033 0.097 0.220	Below product line
Pump Island #13[2]	1/91	TPH-g VOCs	94 ND	Below product line
MW-2	11/90	TPH-g, TPH-d, Motor oil, VOCs	 ND	 5, 15
MW-3	10/90	TPH-g, TPH-d, Motor oil, Benzene Toluene Toluene Ethylbenzene Ethylbenzene Xylenes Xylenes	 ND 0.001 ND 0.026 ND 0.026 ND	 5, 10, 15 10 15 10 15 10 15
MW-4	10/90	TPH-g, TPH-d, Motor oil, Benzene Toluene Toluene Xylenes Xylenes	 ND 0.0026 ND 0.0039 ND	 5, 10, 15 15 5, 10 15 5, 10

Table 2 - *continued*

GROUNDWATER				
Location	Date	Contaminant	Concentration (mg/L)	Monitoring Period
MW-2	10/90	Toluene	0.0027	10/90-3/93
		Xylenes	0.0018	
	3/92	Diesel	0.59	
	9/92	Unknown hydrocarbon	0.05	
MW-3	10/90	Toluene	0.0015	10/90-3/93
	9/92	Unknown hydrocarbon	0.11	
MW-4	10/90	Benzene	0.0010	10/90-3/93
		Toluene	0.0029	
		Ethylbenzene	0.0010	
		Xylenes	0.0038	

Source: Converse Environmental West, 1992a, 1992c, 1991.

Notes:

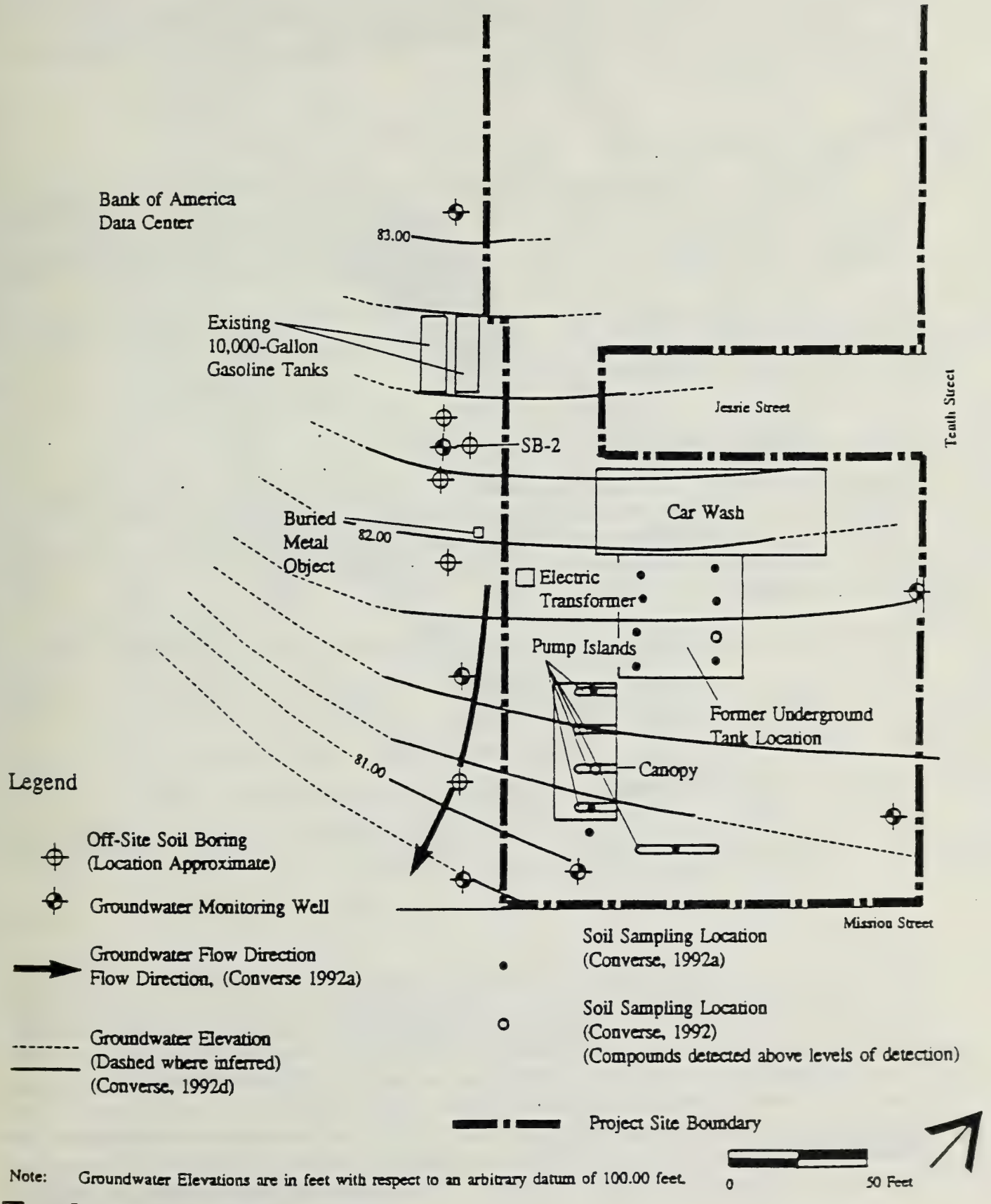
ND = Not detected above laboratory detection limits.
VOCs = Volatile Organic Compounds.
TPH = Total Petroleum Hydrocarbons.
TPH-d = Total Petroleum Hydrocarbons as diesel.
TPH-g = Total Petroleum Hydrocarbons as gasoline.
Refer to Figure 10 for location of borings.

[1] Maximum concentrations shown for each location. All samples analyzed for motor oil, gasoline, diesel, and VOC's.

[2] Eight additional Tank Pit samples and five Pump Island samples analyzed, for TPH-g and VOC's, did not contain compounds above laboratory detection limits of 1 mg/kg (TPH-g) and 0.0025 mg/kg (VOCs).

PREVIOUS INVESTIGATION SAMPLING LOCATIONS

Figure 10



Note: Groundwater Elevations are in feet with respect to an arbitrary datum of 100.00 feet.

Tenth and Market Streets
San Francisco, California

BASELINE

The source of fuel-related contaminants identified in soil and groundwater at the adjacent, cross-gradient site is not known. A buried metal object was identified in a previous investigation (Converse, 1992b) performed to search for evidence of unknown underground tanks at the site (Figure 10); the metal object, approximately four by five feet in dimension, is located in the off-site portion of the former service station (Converse, 1992b).

SUBSURFACE CONDITIONS

Previous subsurface investigations at the site indicated that it is underlain by 12 to 15 feet of sandy fill; the fill consists of miscellaneous debris including nails, glass, and burned wood (Western Technologies, Inc., 1989). Unconsolidated, medium- to fine-grained sand, silt, and clayey silt with occasional beds of coarse sand underlie the fill, extending to at least 21 feet below ground surface.

Groundwater was encountered between 17 and 21 feet below ground surface in a previous investigation in 1992; flow direction was toward south-southeast with an average gradient of approximately 0.01 ft/ft (Converse, 1992c).

REGULATORY AGENCY RECORDS SEARCH

Federal, State, and local regulatory agency records were consulted to determine: 1) whether any hazardous materials releases were reported to have occurred at the project site, and 2) locations within one block of the project site where hazardous materials releases have occurred which could potentially have affected the quality of subsurface soils or groundwater at the project site. The agency records, described in Appendix A, included:

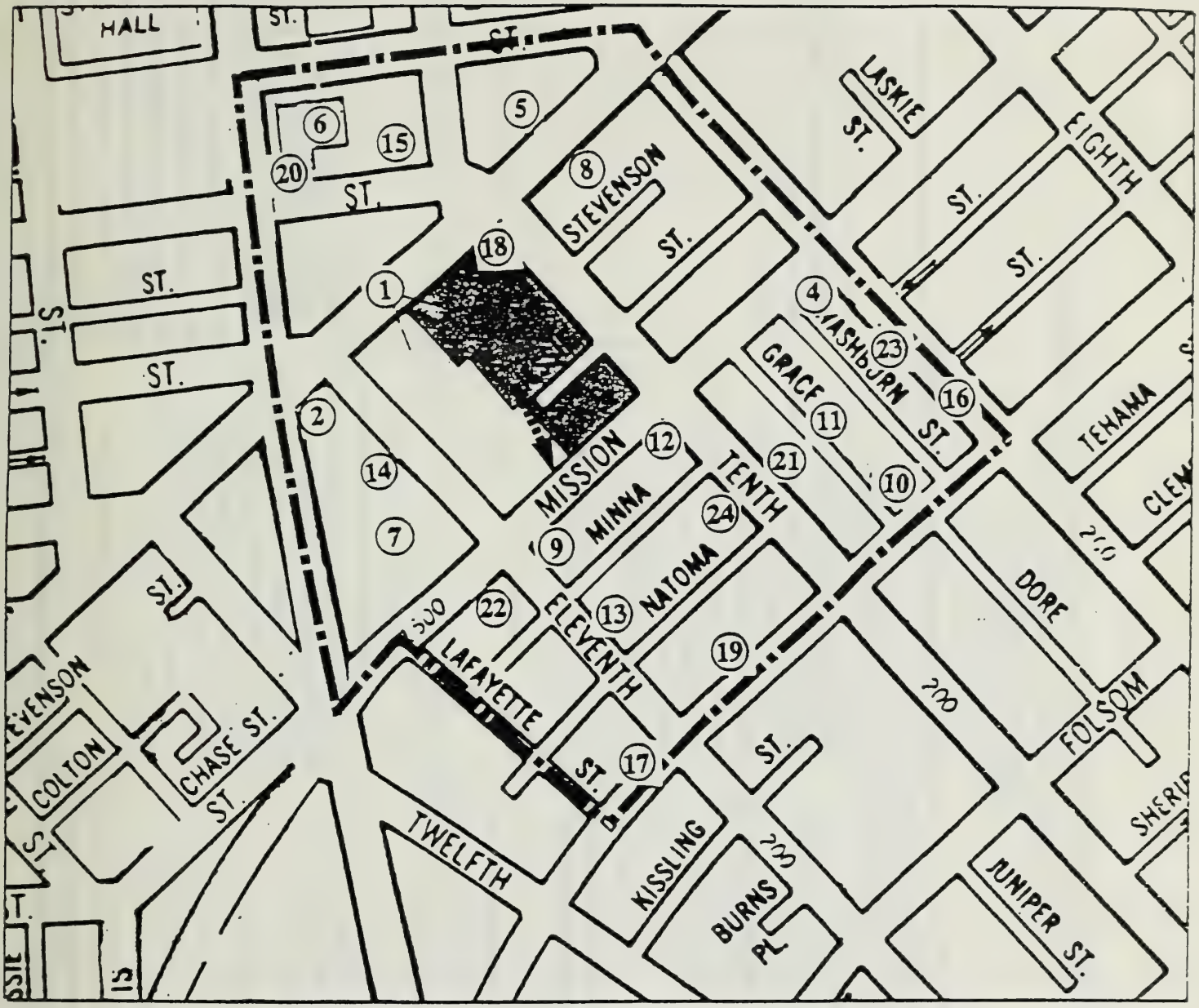
- U.S. Environmental Protection Agency (EPA) National Priorities List (NPL)
- U.S. EPA Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) data base
- U.S. EPA Resource Conservation and Recovery Act (RCRA) database
- California State Department of Toxic Substances Control (DTSC) Calsites
- San Francisco Bay Regional Water Quality Control Board (RWQCB) Fuel Leaks List
- San Francisco Bay RWQCB North Bay Toxics List
- San Francisco Health Department Hazardous Materials Program Files

Project Site

The regulatory agency records contained two files indicating the presence of potentially hazardous materials at the project site. **Site 1**, the adjacent property (Figure 11 and Table 3), from the RWQCB Fuel Leaks List and the San Francisco Department of Health files, contained information for the Bank of America Data Center at 1455 Market Street. The contents of this file were discussed in the section above under Previous Investigations. **Site 18** (Figure 11 and Table 3), which appears on the DTSC Calsites list, refers to a former occupant of the 1401 Market Street address (Sherwin-Williams). The Department of Hazardous Substances (DHS) determined that a preliminary endangerment assessment was required; the site was designated low priority. DTSC has no records concerning **Site 18**.

SITES ASSOCIATED WITH HAZARDOUS MATERIALS RELEASES WITHIN ONE BLOCK OF PROJECT SITE

Figure 11



Legend

Inferred Groundwater Flow Direction (December, 1992) (Converse 1992d)

(22) Site Associated with Potential Hazardous Materials Release

Project Site Boundary

See Table 3 for description of sites

0 500 Feet

Tenth and Market Streets
San Francisco, California

BASELINE

91315-HO 7/27/93

TABLE 3

SITES ASSOCIATED WITH HAZARDOUS MATERIALS RELEASES WITHIN ONE BLOCK OF PROJECT SITE
Tenth and Market Streets
San Francisco, California

Site No.	Site/Address	Operations/Actions Involving Hazardous Materials Release	Known Contamination	Status
1	Bank of America 1455 Market Street[2]	Tanks installed in 1978; unauthorized release of diesel from underground tank observed in 3/89; unauthorized release of gas and motor oil from unknown source in 11/90.	Hydrocarbon compound (not definite pattern) detected in groundwater at 0.13 mg/L in 3/92; up to 550 mg/kg motor oil, 8.4 mg/kg diesel, 190 mg/kg gasoline, VOCs up to 0.02 mg/kg in soil in 11/90 and 2/92; up to 0.36 mg/L gasoline, 0.018 mg/L VOCs in groundwater from 10/90-3/92.	Groundwater monitoring performed at one well since 10/90, three wells since 12/90, and four wells since 3/92.
2	Bank of America 1 So. Van Ness Avenue[2]	Two 10,000-gallon underground diesel storage tanks registered with SFDPH.	*<No further information available.>*	
3	Boston Gear Works (address not available)[3]	*<File not available for review.>*		
4	Brandtjen & Kluge, Inc. 112 Ninth Street[3]	*<File not available for review.>*		
5	Calfox Inc. (Fox Plaza) 1390 Market Street[1,2]	Unauthorized release of gas during tank test in 4/87; two tank test failures in 12/86.	Up to 490 mg/kg diesel in soil on 9/86; up to 66 mg/kg gas, 6,900 mg/kg benzene, 17.0 mg/kg toluene, 37.0 mg/kg xylenes in soil; 590,000 mg/L gas, 32,000 mg/L benzene, 22,000 mg/L toluene, 45,000 mg/L xylenes, 0.022 mg/L ethylene dibromide, 7.4 mg/L total lead in groundwater on 10/86.	Groundwater monitoring well installed to investigate leakage from diesel tank (no contamination encountered) 12/86. Letter from owner to RWQCB (dated 12/86) requesting permission to abandon diesel tank in place. RWQCB memo (dated 3/90) directing staff to determine whether any additional work done; permit granted by SFDPH to remove three 3,000- to 4,000-gallon gasoline tanks; no further information in file.

Table 3 - *continued*

Site No.	Site/Address	Operations/Actions Involving Hazardous Materials Release	Known Contamination	Status
6	California State Automobile Association 150 Hayes Street[2]	Unauthorized release from underground gasoline tank during tank test in 9/87.	Unknown	Tank pull and replacement in 11/90; tank tested tight in 11/91.
7	Coca Cola Enterprises West 1500-1560 Mission Street[1]	Not identified in file.	Up to 790 mg/kg gas, 250 mg/kg diesel, 9.6 mg/kg lead in soil; 2.0 mg/L diesel, 1.5 mg/L gasoline, 0.0013 mg/L benzene, 0.00088 mg/L toluene, 0.110 mg/L ethylbenzene, 0.230 mg/L xylenes, 0.025 mg/L total lead in groundwater from 6/89 to 11/91.	Groundwater monitoring performed from fourth quarter 1989 to fourth quarter 1991. SFDPH certifies completion of removal of 10,000- and 8,000-gallon tanks on 1/92.
8	Easy Washing Machine Corp. 1355 Market Street[3]	*<File not available for review.>*		
9	Former Goodyear Tire Store 1475 Mission Street[2]	Applied to remove 500- gallon waste oil tank on 11/86.	*<No further information available.>*	
10	Lima-Hamilton Corp. 1315 Howard Street[3]	*<File not available for review.>*		
11	Marathon Auto Repair 77 Grace Street[2]	Stores waste oil on-site in 2/91.	*<No further information available.>*	
12	Mark Morris 1401 Mission Street[2]	Soil investigation performed in 2/91.	Up to 440 mg/kg TPH-g, 0.16 mg/kg toluene, 1.0 mg/kg ethylbenzene, 3,500 mg/kg xylenes in soil; up to 2.0 mg/L xylenes, 0.190 mg/L ethylbenzene, 0.240 mg/L toluene, 250 mg/L TPH-g, 3 mg/L TPH-d in soil water from borings on 2/91.	*<No further information available.>*

Table 3 - *continued*

Site No.	Site/Address	Operations/Actions Involving Hazardous Materials Release	Known Contamination	Status
13	Moore Machine Works 146 Eleventh Street[2]	Unauthorized release of gasoline from underground tank during removal in 7/91.	Up to 0.0086 mg/kg xylenes, 460 mg/kg total lead in excavation soil.	*<No further information available.>*
14	O'Keefe, W. F. Jr. 55 Eleventh Street[3]	*<File not available for review.>*		
15	Park Merced Apartments 1 Fell Street[2]	Approval to remove 550- gallon waste oil tank given 3/89 by SFDPH.	*<No further information available.>*	
16	Precision Bearings, Inc. 173 Ninth Street[3]	*<File not available for review.>*		
17	Royal Motors Sales 1525 Howard Street[1,2]	Tank pull completed 5/87; no further action required.	*<No further information available.>*	
18	Sherwin-Williams 1401 Market Street[3]	*<File not available for review.>*		
19	Thor Corp. 1434 Howard Street[3]	*<File not available for review.>*		
20	Unknown 100 Van Ness Avenue[2]	Two diesel tanks, 2,000 and 1,700 gallons, installed in 1972; monitoring of tanks began in 7/88.	*<Unknown>*	*<No further information available.>*
21	Unknown 135 Tenth Street[2]	Carburetor repair shop stores solvent for parts cleaning.	*<No further information available.>*	

Table 3 - *continued*

Site No.	Site/Address	Operations/Actions Involving Hazardous Materials Release	Known Contamination	Status
22	Vilo Properties 1501-1517 Mission Street[2]	Eight 70-gallon lube oil tanks pulled, seven 500- gallon waste oil tanks pulled in 12/92.	TPH-g, TPH-d, oil and grease, metals, volatile organic compounds detected in stockpiled soil removed with lube oil tanks; excavation soil samples indicated non-detectable levels of same compounds. Lead detected in waste oil excavation soil at up to 500 mg/kg.	No further investigation or remedial action required by SFDPH on 8/93.
23	Western Manufacturing Co., Inc. 149 Ninth Street[3]	*<File not available for review.>*		
24	Whitney Vincent Co. 130 Tenth Street[3]	*<File not available for review.>*		

Notes:

Site numbers on table correspond with site numbers on Figure 11.
TPH = Total petroleum hydrocarbons.
TPH-d = Diesel.
TPH-g = Gasoline.
VOC = Volatile organic compounds.

[1] Source: RWQCB, Fuel Tank Leak Files, 1993.
[2] Source: SFDPH, Hazardous Materials Section Files, 1993.
[3] Source: DTSC, Calsites List, 7 May 1993.

Sites Associated with Hazardous Materials Releases within One Block of Project Site

Twenty-four sites, associated with the known release of hazardous materials, and located within one block of the project site, were identified during the record search. Information obtained from agency files on these sites is summarized in Table 3, shown in Figure 11, and described below. Assuming that regional shallow groundwater flow direction is south to southwest; five sites are located upgradient from the project site (Sites 5, 6, 8, 15, and 20 on Figure 11).

EPA. The CERCLIS, RCRA, and NPL lists contained no sites located within one block of the project site.

DTSC. Thirty sites within one block of the project site were identified on the Calsites list; DTSC (formerly Department of Health Services) conducted a preliminary site assessment and concluded that no further action was necessary for twenty of the sites; these sites are not included in Table 3 or Figure 11. The remaining ten sites were screened by DTSC and a preliminary endangerment assessment was required. All ten of these sites were designated low priority (Sites 3, 4, 10, 14, 16, 19, 23, and 24 on Figure 11 and Table 3). DTSC has no records concerning these ten sites.

There were no sites within one block of the project site on the State Bond Expenditure Plan.

RWQCB. The RWQCB Fuel Leaks files contained three sites within one block of the project site (Sites 5, 7, and 17 in Figure 11 and Table 3). On the basis of the assumed groundwater flow direction toward the south-southeast, Site 5 would be upgradient from the project site while sites 7 and 17 would be downgradient. Therefore, Site 5 could possibly affect the project, if contaminants from that site were migrating in the groundwater toward the project site.

Upgradient Site

Site 5. An unauthorized release from an underground tank was reported on April 1987 during a tank test at Site 5. The release was from a 3,000-gallon gasoline tank approximately 20 years old. Three underground tanks were located on Site 5 at the time of the release. Information concerning additional work performed on Site 5 was not available in the file reviewed. In October 1989, four inches of floating product (gasoline) was observed on the groundwater in a monitoring well installed on the site at 1390 Market Street to monitor leakage from a 10,000-gallon diesel tank; no diesel was detected in the groundwater. Gasoline was detected at 590,000 mg/L, benzene at 32,000 mg/L, toluene at 22,000 mg/L, xylenes at 45,000 mg/L, ethylene dibromide (EDB) at 0.022 mg/L, and total lead at 7.4 mg/L. Diesel was detected in soil at 16 feet below ground surface at 490 mg/kg.

Downgradient Sites

Site 7. A subsurface investigation performed in September 1989 at Site 7 revealed the presence of up to 790 mg/kg of gasoline, 250 mg/kg diesel, and 9.6 mg/kg lead in soils. Groundwater at the site contained up to 0.0013 mg/L benzene, 0.00074 mg/L ethylbenzene, and 0.00036 mg/L xylenes. Quarterly groundwater monitoring began in October 1989; groundwater results through November 1991 were available for review in the RWQCB file for the site. Diesel was detected at 2.0 mg/L; gasoline at 1.5 mg/L; benzene at 0.0013 mg/L; toluene at 0.00088 mg/L; ethylbenzene at 0.110 mg/L; total xylenes at 0.230 mg/L; and total lead at 0.000025 mg/L in

groundwater from Site 7. Two tanks were removed from Site 7 in January 1992. Groundwater was determined to flow east-southeast at the site. The file contained no further information concerning remediation of the site.

Site 17. An underground storage tank was removed from Site 17 in May 1987. No further action was required by the SFDPH, and no contamination was reported.

SFDPH. BASELINE reviewed files at the SFDPH Hazardous Materials Division for eleven sites associated with underground storage tanks within one-block of the project site. Five of these sites (5, 6, 15, and 20 on Figure 11) are upgradient of the project site, while the remaining sites are downgradient.

Upgradient Sites

Site 5. The SFDPH file contained additional information on this site, in addition to the data contained in the RWQCB files (discussed above). Diesel, gasoline, volatile organic compounds (VOCs), and lead, were detected in soil and groundwater on Site 5 in November 1986 (Table 3). The SFDPH granted permission in January 1990 to remove three gasoline tanks from the site. Further information concerning the extent of contamination was not available in the files examined.

Site 6. An unauthorized release from an underground gasoline tank occurred at Site 6 (Figure 11 and Table 3) in September 1987; no information on contamination of the site was available for review. One underground tank was replaced at Site 6 in November 1990, and tested tight one year later.

Sites 15 and 20. No releases from underground tanks were identified in the SFDPH files from these sites.

Downgradient Sites

A subsurface investigation (two soil borings to a depth of 23 feet) performed in February 1991 at Site 12 revealed the presence of gasoline and VOCs in soil, and gasoline, diesel, and VOCs in soil water (Table 3). An unauthorized release of gasoline occurred at Site 13 during removal of a tank in July 1991. Xylenes (0.0086 mg/kg) and total lead (460 mg/kg) were detected in soils from the tank excavation. The SFDPH requires no further investigation on Site 22 where gasoline, diesel, oil and grease, metals, and VOCs were detected in soils removed from a tank area and disposed of off-site (Table 2). Sites 2, 9, 11, and 21 have had no recorded releases of product.

CONCLUSIONS

- The site is underlain by fill to a depth of about 12 to 15 feet, underlain by unconsolidated sediments to a depth of about 21 feet. In 1992, groundwater was encountered at depths of 17 to 21 feet, moving south-southeasterly.

- Current on-site land uses, potentially involving the use of hazardous materials, include the photo processing service. Paint, wax stripper, and chemicals used in HVAC units are present

on the roof of buildings on site. Fluorescent light ballasts and an electrical transformer on-site may contain PCBs.

- Seven 55-gallon drums are stored on-site. One drum may contain solvents, one drum contains unknown substances, and five drums contain materials generated during previous subsurface investigations.

- In 1992, four 10,000-gallon gasoline tanks and associated piping and pump islands were removed from the site. Soil samples collected from below the tanks and pump islands indicated gasoline and volatile organic compounds above the levels of detection, indicating releases from former tank operations.

- Historical on-site land uses could have affected the subsurface. Past subsurface investigations have analyzed soil and groundwater for total petroleum hydrocarbons and BTXE. Chemical compounds from past land uses that may have affected the site also include metals, solvents, and creosote; these compounds have not been analyzed for in past investigations.

- Known releases of hazardous materials within one block of the project site are limited to those involving petroleum hydrocarbons; it is not known whether groundwater underlying the site has been affected by off-site, upgradient sources of petroleum hydrocarbons and volatile organic compounds.

RECOMMENDATIONS

Based on the results of the Phase I site assessment, BASELINE recommends the collection and analysis of soil samples from the site and the removal and disposal of hazardous materials currently stored at the site.

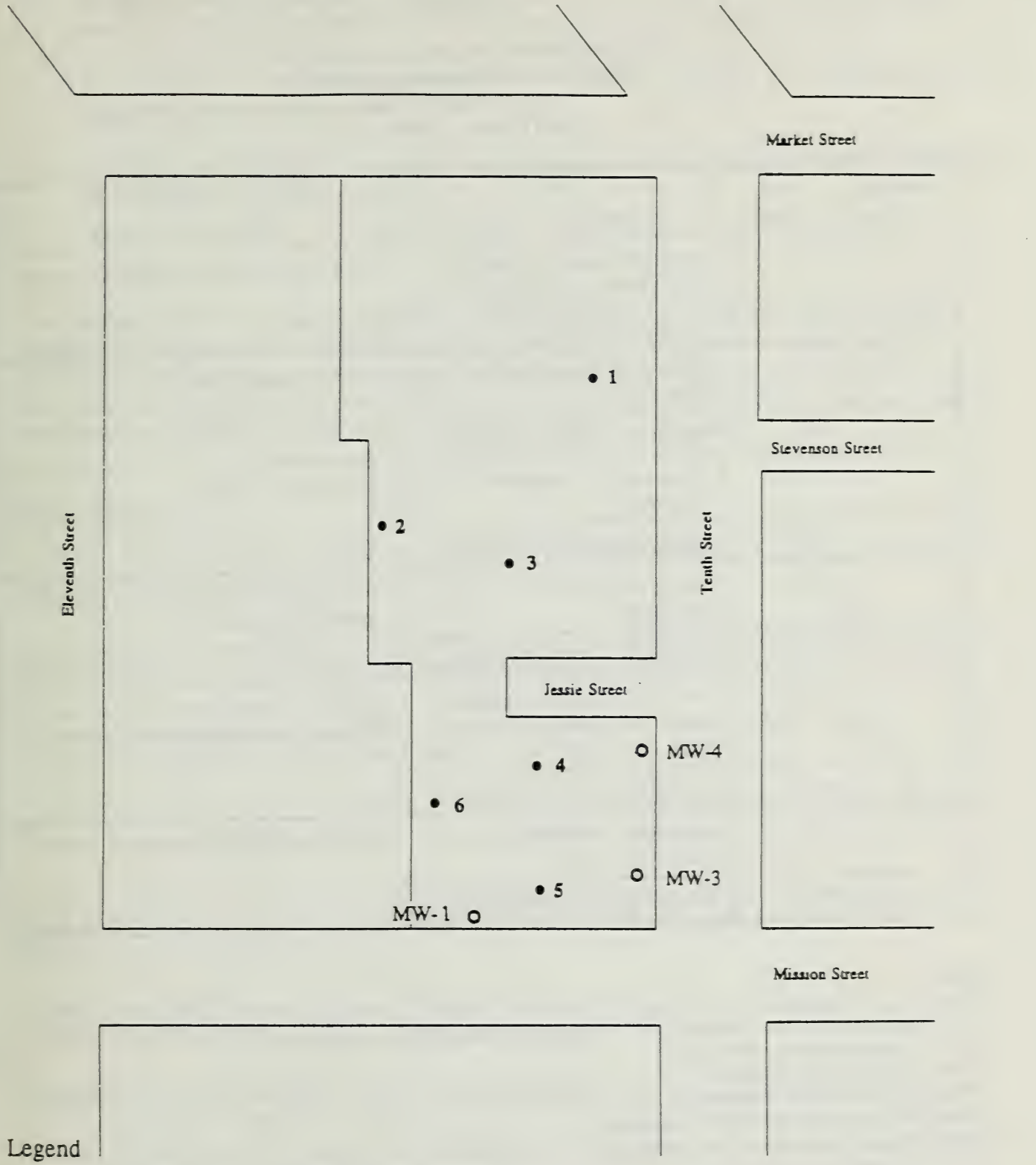
- A total of six sampling locations are proposed to characterize subsurface conditions on the site (Figure 12 and Table 4). The sampling locations are proposed to evaluate potential releases from current or past sources of hazardous materials, and to determine the quality of fill for the purpose of determining health risks to construction workers, soil management options for excavated soils, and remediation requirements. The soil samples should be collected in accordance with State-approved methods and under the supervision of a certified professional.

- Two soil samples should be collected from each soil boring. The samples should be collected at a depth of two feet below ground surface and at the soil/groundwater interface. Table 4 presents the recommended chemical analyses for each sample. Upon receipt of analytical results, the field activities should be documented and the results evaluated to determine either remedial actions or additional activities and recommendations for disposal options for drummed soil cuttings and steam-cleaning rinsate should be provided.

- Groundwater samples should be collected from the on-site monitoring wells. The last sampling event occurred in March 1993. The samples should be analyzed for volatile and extractable

PROPOSED SOIL BORING LOCATIONS

Figure 12



Legend

MW-2 o Existing Groundwater Monitoring Well

1 • Proposed Soil Boring

Refer to Table 4 for Proposed Laboratory Analysis.

0 110 Feet

Tenth and Market Streets
San Francisco, California

BASELINE

TABLE 4

RECOMMENDED CHEMICAL ANALYSES
Proposed Soil Sampling Activities
Tenth and Market Streets
San Francisco, California

Boring Location	Depth	Analyses/EPA Material	Reasons for Sampling
1	2 ft.	TEH/8015; semi-VOCs/8270; VOCs/8240; metals/6010, 7470	Auto repair/painting; paint store.
1	GI	Metals/6010, 7470	
2	2 ft.	Creosote/8270; metals/6010, 7470; TEH/8015	Lumber storage; parking.
2	GI	Metals/6010, 7470; TEH/8015	
3	2 ft.	Creosote/8270; metals/6010, 7470; TEH/8015	Lumber yard; parking.
3	GI	Metals/6010, 7470; TEH/8015	
4	2 ft.	Metals/6010, 7470; TEH, TVH/8015	Former car wash; adjacent (upgradient) to former tank location.
4	GI	Metals/6010, 7470; TEH/8010	
5	2 ft.	TEH, TVH/8015; VOCs/8240; semi-VOCs/8270; metals/6010, 7470	Adjacent (downgradient) to former tank location (former gas and oils station).
5	GI	Metals/6010, 7470; TEH/8015	
6	2 ft.	PCBs/8080; TEH/8015; metals/6010, 7470	Electrical transformer; parking.
6	GI	Metals/6010, 7470; TEH/8015	

Notes:

GI = Groundwater interface, probably 17 to 20 feet below ground surface.
TEH = Total extractable hydrocarbons.
TVH = Total volatile hydrocarbons.
VOCs = Volatile organic compounds.
Semi-VOCs = Semi-volatile organic compounds.
Refer to Figure 12 for proposed soil sampling.
/xx = EPA analytical methods.

petroleum hydrocarbons (EPA Method 8015M), volatile organics (EPA Method 8020), and those additional compounds identified during the soil sampling activity, if any.

- All hazardous materials on-site should be removed and disposed of in accordance with applicable laws and regulations.

- Vent lines associated with the underground gasoline storage tanks on the adjacent site should be relocated to an off-site location.

LIMITATIONS

The services BASELINE has performed in connection with this study have been performed in accordance with generally accepted principles and practices applicable to the profession at this time. The data presented were obtained from reviewing public agency files, interviewing private individuals and public agency staff, and performing a site reconnaissance. We make no other warranty or representation, expressed or implied, for the work described in this report.

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APPENDIX A

DESCRIPTION OF REGULATORY AGENCY RECORDS AND DATABASES CONSULTED

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APPENDIX A

DESCRIPTION OF REGULATORY AGENCY RECORDS AND DATABASES CONSULTED

FEDERAL AGENCIES

United States Environmental Protection Agency (EPA)

National Priorities List (NPL) - Lists Federal cleanup (superfund) sites.

Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) - Provides information of Federally-lead enforcement/remediation sites which may be candidates for the NPL.

Resource Conservation and Recovery Act (RCRA) Data Base - Lists sites which are known to generate or handle Federally-designated hazardous wastes.

STATE AGENCIES

Department of Toxic Substances Control (DTSC)

Cal-Sites - combines the former Abandoned Sites Program Information System (ASPIS) and State Superfund List, or Bond Expenditure Plan

- Lists potential hazardous waste sites identified by the historical Abandoned Site Survey Program. Most sites in this data base have been identified as requiring no further action based on a determination by DTSC [then DHS (Department of Health Services)] that the available data did not suggest an uncontrolled release of hazardous waste had occurred at the sites, or any reported release at sites so designated did not represent a significant public health or environmental threat.

- Gives specific information in a data base form for those abandoned sites that DTSC inspected. Also includes information on potential hazardous waste sites derived from the Rural Counties and Federal and State Site Evaluation Programs.

- Lists all verified sites that are or will be targeted for cleanup by DTSC under the Expenditure Plan for the Hazardous Substance Cleanup Bond Act of 1984. Also includes the NPL.

Case files - Surveillance and Enforcement, Permitting and Site Mitigation case files for individual sites regulated by DTSC. Files also include complaints about hazardous waste problems made to DTSC by the public.

Agency Records - *continued*

Regional Water Quality Control Board (RWQCB), San Francisco Bay Region

North Bay Toxic Cases - Data base and case files for sites where known contamination of groundwater has occurred.

Fuel Leaks List - Data base and case files for sites where petroleum product/waste has been reported to be leaking. Files give information on tank removal and remediation.

CITY AND COUNTY AGENCIES

San Francisco Health Department

Case files - Files contain information on underground tanks, hazardous materials storage and handling and inspection and enforcement actions at hazardous waste sites.

APPENDIX H

WIND ANALYSIS METHODOLOGY

PEDESTRIAN-LEVEL WIND-TUNNEL STUDY OF THE PROPOSED FEDERAL BUILDING IN SAN FRANCISCO, CALIFORNIA

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PEDESTRIAN-LEVEL WIND-TUNNEL STUDY OF THE PROPOSED FEDERAL BUILDING IN SAN FRANCISCO, CALIFORNIA

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PEDESTRIAN-LEVEL WIND-TUNNEL STUDY OF THE PROPOSED FEDERAL BUILDING IN SAN FRANCISCO, CALIFORNIA

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6/28/94
REVISED 10/17/94
REVISED 1/2/95

STATEMENT OF LIMITATION AND DISCLAIMER

"The professional opinions and judgments set forth in this report are based on laboratory testing performed persuant to acceptable wind engineering standards. All the laboratory test results are limited to the specific conditions of the applicable testing program. I believe my observations and interpretations of the test results conform to current applicable engineering techniques and principles. No warranty is expressed or implied."

INTRODUCTION

This study considers the pedestrian-level wind environment in the vicinity of the Tenth and Market Streets Alternative and for the Seventh and Mission Streets Alternative. For the Tenth and Market Alternative a wind-tunnel study was conducted for Design Options A, B, C and D as well as the existing setting. For the Seventh and Mission Alternative a wind-tunnel study was conducted for Design Options 1 and 2, as well as the existing setting. The studies are independent of the University. Schematic drawings of Options A, B, C and D and 1 and 2 are presented in the Appendix A.

WIND CHARACTERISTICS

The comfort of pedestrians varies under different conditions of sun exposure, temperature, clothing, and wind speed. Winds up to four miles per hour (mph) have no noticeable effect on pedestrian comfort. With winds from four to eight mph, wind is felt on the face. Winds from eight to thirteen mph will disturb hair, cause clothing to flap, and extend a light flag mounted on a pole. Winds from 13 to 19 mph will raise loose paper, dust and dry soil, and will disarrange hair. For winds from 19 to 26 mph, the force of the wind will be felt on the body. With 26 to 34 mph winds, umbrellas are used with difficulty, hair is blown straight, there is difficulty in walking steadily, and wind noise is unpleasant. Winds over 34 mph increase difficulty with balance and gusts can blow people over (Penwarden, 1973).

EXISTING CITY PLANNING CODE

The City Planning Code Section 148, Reduction of Ground-Level Wind Currents in C-3 (Downtown Commercial) Districts, requires buildings to be shaped so as not to cause ground-level wind currents to exceed, more than 10% of the time, 11 mph in substantial pedestrian use areas, and 7 mph in public seating areas. The wind ordinance is defined in terms of equivalent wind speed, an average wind speed (mean velocity) adjusted to include the level of gustiness and turbulence (White, 1992).

The Code requires also that buildings not cause equivalent wind speeds to reach or exceed the hazard level of 26 mph for a single full hour of the year, or 0.011416% of the time.(The City and County of San Francisco Municipal Code-Section 148 specifically states "No exception shall be granted and no building or addition shall be permitted that causes equivalent wind speeds to reach or exceed the hazard level of 26 miles per hour for a single hour of the year"). The comfort criteria are based on wind speeds that are

measured for one minute and averaged. In contrast, the hazard criterion is based on winds that are measured for one hour and averaged; when stated for the same averaging time (i.e., one minute averages) basis as the comfort criteria winds, the hazard criterion speed is a one-minute average of 36 mph (White, 1992). The adjusted value of 36 mph equivalent wind speed is used to evaluate compliance with the hazard (safety) criterion. As stated above the winds at or above the hazard criterion wind speeds pose real safety risks for pedestrians. In this study, as in the Code, the percentage and number of hours that the hazard criterion is exceeded is the more important part of the result. The wind speeds reported are all above the levels at which pedestrians would be at risk of upset and possible injury, so the number of hours exposure to such a risk is the most important evaluation factor. Appendix B presents the complete methodology of the ordinance and provides the written text of the wind ordinance within it.

The proposed project is a Federal Office Building and as such is not specifically addressed by the City Planning Code for wind impacts. However, for the purposes of this analysis, the project was examined using the criteria established for the Downtown Commercial (C-3) District. A "one inch = 50 feet" scaled model of the area surrounding the proposed building for several blocks in all directions was provided by Environmental Science Associates of San Francisco. For the Tenth and Market Alternative, wind-tunnel tests were conducted: (i) for the setting in its existing conditions (including all approved development); (ii) for Option A in the existing setting; (iii) for Option B in the existing setting; (iv) for Option C in the existing setting; and, (v) for Option D in the existing setting. For the Seventh and Mission Alternative wind-tunnel tests were conducted: (i) for the setting in existing conditions (including all approved development); (ii) for Option 1 in the existing setting; and, (iii) for the Option 2

in the existing setting.

MODEL TESTING AND METHODOLOGY

The model was tested in a wind tunnel that allows testing of natural atmospheric boundary layer flow past surface objects such as buildings and other structures. The tunnel has an overall length of 22 meters (m) (72 feet), a test section of 1.22m (4 feet) wide by 1.83 m (6 feet) high, and an adjustable false ceiling. The adjustable ceiling and turbulence generators allow speeds within the tunnel to vary from one to eight meters per second (m/s), or 2.2 to 17.9 mph.

Wind-speed measurements were made with a hot-wire anemometer, an instrument that directly relates rates of heat transfer to wind speeds by electronic signals. The hot-wire signals are proportional to the magnitude and steadiness of the wind. By measuring both the mean wind speeds and corresponding turbulence intensities, high wind speeds and gustiness (changes in wind speeds over short periods of time) could be detected. The ratio of near-surface speed to reference wind speed was calculated from the hot-wire measurements. The inherent uncertainty of measurements made with the hot-wire anemometer close to the surface of the model is plus or minus five percent of the true values.

The equivalent wind speeds at street level were determined by relating the wind-tunnel results with statistically representative records of San Francisco wind data. Data describing the speed, direction, and frequency of occurrence of winds were gathered at the old San Francisco Federal Building at 50 United Nations Plaza (at a height of 132 ft.) during the six-year period from 1945 to 1950. Measurements taken hourly and averaged over one-minute periods have been tabulated for each month (averaged over the six

years) in three-hour periods using seven classes of wind speed distribution and 16 compass directions. Analysis of these data shows that during the hours from 6:00 a.m. to 8:00 p.m., about 70 percent of all winds blow from five of the 16 directions, as follows: Northwest (NW), 10 percent; West Northwest (WNW), 14 percent; West (W), 35 percent; West Southwest (WSW), 2 percent; Southwest (SW), 9 percent; and all other winds, 28 percent. Calm conditions occur two percent of the time. More than 90% of measured winds over 13 mph blow from the NW, WNW, W, WSW or SW.

Each wind-tunnel measurement results in a ratio that relates the speed of ground-level wind to the speed at the reference elevation, in this case the height of the old San Francisco Federal Building. The frequency with which a particular wind velocity is exceeded at any test location is then calculated by using the measured wind-tunnel ratio and a specified ground speed to determine the corresponding reference wind speed for each direction. In general, this gives different reference speeds for each major directional component (NW, WNW, W, SW, and Other). The wind data for San Francisco are then used to calculate the percentage of the time that the specific ground-level wind speed is exceeded for each directional component. The sum of these is the total percentage of time that the specified ground-level wind speed is exceeded. A computer is used to calculate the total percentages for a series of wind speeds until the speed exceeded ten percent of the time is found.

The equivalent wind speeds are compared to the comfort criteria of 11 mph for pedestrian areas and seven mph for seating areas, each not to be exceeded more than ten percent of the time. A separate set of calculations similar to those used to determine the 10% exceeded wind speeds, are used to compute the equivalent wind speeds and number of in order to evaluate compliance with the hazard criterion. Both sets of calculations are made using a

computer program provided by Environmental Science Associates.

STUDY RESULTS

Thirty-three to 46 pedestrian-level test locations (depending on the option being tested) in the Tenth and Market Alternative and 27 pedestrian-level test locations in the Seventh and Mission Alternative were studied for the tested configurations and for each of the four prevailing wind directions: northwesterly, west-northwesterly, westerly, and southwesterly (west-southwesterly winds are accounted for in the analysis of southwesterly winds). These wind conditions are the most common in San Francisco, and are therefore the most representative for evaluation of the proposed building. All hot-wire measurements were taken at the same series of surface points around the building site for all test configurations and wind directions included in testing.

All of the respective test locations at the two alternative sites correspond to sidewalk and public plazas, which are representative outdoor pedestrian areas; therefore, the 11-mph comfort criterion is appropriate to assess the state of the "wind environment" for the three configurations tested. The comfort criterion results will be discussed first and then the hazard criterion results will be addressed. Note, however, that the hazard criterion is considered to be more significant since violations of it could (for projects which do fall under the authority of Section 148 of the Planning Code) result in denying of the project under the "No exception shall be granted" rule of the ordinance.

For the Tenth and Market Alternative, previous wind-tunnel testing, as well as anecdotal information about winds in this area (i.e., along Market Street from the Fox Plaza tower to the Eight Street), clearly show that extreme winds occur along Market Street between Seventh Street and Eleventh Street (including the proposed

site's Market Street frontage). Therefore, there may be a direct effect of this project upon the winds at the measured locations previously tested (location numbers #1,#2 and #3). The current analysis included some of these known critical locations for reference.

The Seventh and Mission Alternative site also is generally perceived as very windy on occasion; however, it is know to be a more favorable wind environment as compared to the Tenth and Market Alternative.

The locations of the measurement points and the result of the wind-tunnel study for compliance with the comfort criteria are summarized in Figures 1, 2 and 3 and Tables I, II and III. Throughout the following discussion, the wind speeds reported refer to the equivalent wind speeds that would be exceeded 10% of the time for the pedestrian comfort criterion, and to equivalent wind speeds that would be exceeded one hour per year (0.011416% of the time) when referring to the hazard criterion.

TENTH AND MARKET ALTERNATIVE

Existing Setting

Comfort Criterion. The existing setting is considered very windy with 20 of the total 33 test locations exceeding the 11-mph pedestrian-comfort criterion. Wind speeds (i.e., equivalent speeds exceeded 10% of the time) range from 12 to 24 mph along Market Street, with the south side (Market Street side) of the Fox Plaza tower plaza and the sidewalk corner area of the project site at Market and Tenth Streets both at an unusually high wind speed of 24 mph each (locations #1 and #8, respectively). Along Tenth Street between Mission and Market Streets, wind speeds range from 13 to 24 mph while wind speeds on Mission Street range from 11 to

17 mph. Also, wind speed at the base of the AAA Building on Fell Street between Van Ness Avenue and Polk Street is found to be an extraordinarily high 29 mph.

Hazard Criterion. Fourteen measured locations are found to exceed the hazard criterion. A cumulative total of about 800 hours per year exceedances of the hazard criterion were measured for these fourteen locations. The two greatest exceedances, in terms of duration or hours, are locations #8 and #26 (location #26 is located on Fell Street at the base of the AAA Building). These locations have existing exceedances of 2.39% and 2.26% or 209 and 198 hours per year exceedance, respectively; and, represent more than half of all the cumulative hours exceeded. Location #9, across 10th Street from the proposed site, also has a large exceedance of the hazard criterion, 1.27% or about 110 hours exceedance per year. Additionally, three other locations (#30, #1 and #33) have substantial exceedances of the hazard criterion with values 0.73, 0.69 and 0.61% or 64, 61, and 53 hours per year exceedances, respectively. These six locations comprise about 697 of the 800 hours of total cumulative exceedances, or 87% of all hazard exceedances. Location #30 is on Stevenson Street at 10th Street; location #1 is on the Fox Plaza tower plaza near Market Street; and, location #33 is on Hayes Street just north of Market Street intersection.

The existence of these substantial and major exceedances of the hazard criterion are due to and directly associated with the presence of three relatively taller buildings in the immediate vicinity. The three structures are the AAA building on Fell Street at Van Ness Avenue and the Fox Plaza tower and Bank of America building both approximately across Market Street from each other and close to the project site. All three buildings are in excess of 300 feet tall, whereas surrounding structures are substantially less in height. Additionally, the unique

positioning of the three buildings relative to each other (primarily the Fox Plaza tower and Bank of America building) creates a preferential channel or "Venturi" effect between these structures on Market Street and around the individual buildings for inclusive winds between the southwest and northwest directions, which unfortunately are highly frequent wind directions.

Option A Configuration

Comfort Criterion. The overall Option A wind environment would be about the same or slightly worsened over that of the existing setting, primarily along the south side of Market Street east of the maximum project (i.e., east of Tenth Street). Wind speeds would change three mph or less at all locations with the exception of locations #6 and #14 where there would be decreases of 5 and 4 mph, respectively (near the ends of the Option A buildings on Market and Tenth Streets); and, locations #24, #25 and #28 where there would be increases of 4, 5 and 4 mph, respectively, all of which would occur along the south side of Market Street between Tenth and Ninth Streets. It is observed that there would be an intensification of this wind flow along the pedestrian-level areas on Market Street caused by the Option A building resulting in these wind speed increases.

As compared with the existing setting, wind speeds would decrease at 14 locations, increase at 13 locations, and remain the same at six locations. Wind speeds around the Option A's sidewalk areas on Market, Tenth and Mission Streets would range from a low of nine mph (on Mission Street) to a high of 26 mph which would occur at the Market-Tenth Streets intersection. Wind speeds on Market Street would range from 13 to 26 mph (the 26 mph winds would occur on both sides of Market Street at the Option A corner and on the Fox Plaza tower's plaza fronting Market Street). Overall, 29 of

the total 33 locations included in the wind-tunnel test would experience wind speeds exceeding the 11-mph pedestrian-comfort criterion.

Hazard Criterion. The Option A setting would substantially worsen the wind environment at the site location as compared to either the existing setting or Option B setting. At the Fox Plaza tower plaza (location #1), as would be the case in the Option B setting, the Option A would cause a substantial increase in the number of hours of hazard exceedance by 321 hours or by 526% as compared to the existing setting (382 total hours in the Option A setting versus 61 hours in the existing setting). This is an unacceptable increase by any standards, and represents more than five events of hazardous conditions that would be present on the Fox Plaza tower plaza for every single event of hazardous wind conditions that now exists.

Overall, 15 of the total 33 measured locations would exceed the 26 mph for more than one hour (average speed) per year hazard criterion, as compared to 14 exceedances in the existing setting. This would represent a net increase of one additional hazard exceedance location: location #19, the northeast corner of the Mission-Tenth Streets intersection would no longer be a hazard exceedance; however, locations #21 and #23 would become hazard exceedance locations. Location #21 is at the northeast corner of the Mission-Eleventh Streets intersection. Effectively, the Option A setting shifts the hazardous conditions from location #19 to location #21 presumably due to alternating the wind flow patterns around the site block buildings. At location #23 a new hazard exceedance would occur due to the presence of the Option A building. This exceedance would be a continuation of the hazard winds from the Fox Plaza tower plaza along Market Street to location #23. Location #23 is mid-way along the north side of Market Street between Tenth and Ninth Streets. It would be likely

that hazard exceedances would exist all along the north side of Market Street between Tenth and Ninth Street as all pertinent measured locations (#1, #2, and #23) have indicated.

The Option A setting would cause a substantial increase in the cumulative total number of hours of hazard exceedance by 55% (or by causing an additional 439 hours of exceedance) as compared to the existing setting. Significant increases in hours exceeding the hazard criterion would be registered at locations #9, #10, #20 and #33 in addition to location #1 (Fox Plaza tower) which already was discussed. Location #9, the southeast corner of the Market-Tenth Streets intersection across Tenth Street from the site, would have a 1.64% exceedance or 144 hours per year (as compared to 111 hours in the existing setting). Location #10, about 100 feet south of Market Street on Tenth Street would have an exceedance of 0.73% or 64 hours per year (as compared to 16 hours in the existing setting). Location #30, Stevenson Street at Tenth Street, would have an exceedance of 1.15% or 100 hours per year (as compared to 64 hours in the existing setting). And lastly, location #33, about 150 feet north of Market Street on Hayes Street, would have an exceedance of 1.50% or 131 hours per year (as compared to 53 hours per year in the existing setting). A decrease in the number of hours of hazard exceedance would occur at location #26, the base of the AAA building to 136 hours from 198 hours in the existing setting.

Option B Configuration

Comfort Criterion. The overall Option B wind environment would be comparable to that of the existing setting, with wind speeds changing two mph or less at all measured locations, except location #6 and #14, where wind speeds would decrease to 14 mph from 18 mph. Location #6 is on the south side of Market Street between the Option B building and the Bank of American building,

while location #14 is on the west side of 10th Street about 100 feet north of the Mission Street intersection. In both cases, the 11-mph comfort criterion still would be exceeded, although the percentage of exceedance time would decrease to 23% from 37% for location #6 and to 16% from 32% for location #14.

As compared with the existing setting, wind speeds would decrease at 17 locations, increase at nine locations, and remain the same at seven locations. Wind speeds around the Option B's sidewalk areas on Market, Tenth and Mission Streets would range from a low of 9 mph (on Mission Street) to a high of 24 mph at the Market-Tenth Streets intersection. Wind speeds on Market Street would range from 13 to 25 mph (with the 25 mph wind speed on the Fox Plaza tower's plaza fronting Market Street).

Overall, 28 of the total 33 locations included in the wind-tunnel test, would experience wind speeds exceeding the 11-mph pedestrian-comfort criterion. Location #29 would not exceed the criterion (11 mph) whereas in the existing setting it does exceed the criterion (12 mph).
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Hazard Criterion. By far, the most serious concern about the Option B wind environment would be the increase in the total number of hours of hazard exceedance that would occur on the north side of Market Street in the public plaza of the Fox Plaza Building (location #1). Then the Option B building would cause an increase in the number of hours of hazard exceedance of about 149 hours (210 hours in Option B setting versus 61 hours in the existing setting), a sizable and substantial increase as more intensity and strong gusts of winds on the plaza area would be associated with this increase. This represents a 244% increase in hazard occurrence on the Fox Plaza tower plaza, an already known unacceptable windy area on occasion. Accordingly, for every

unacceptable wind event that now occurs on the plaza there would be about three and one-half unacceptable wind events in the project setting of comparable and/or worst wind conditions.

Overall, 12 of the total 33 measured locations would exceed the 26 mph for more than one hour (average speed) per year hazard criterion, as compared to 14 exceedances in the existing setting. The two locations that would comply in the Option B setting (locations #11 and #19) had relatively low hours of exceedance, (3.6 and 4.2 hours, respectively) in the existing setting and both would fall below the one-hour criterion in the Option B setting; however, in view of the gross value of the cumulative total hours of increases of exceedance, these improvements in the wind environment are not viewed as significant.

A cumulative total of about 855 hours per year exceedances would occur at the 12 measured locations, an overall increase of 9.76% as compared to the existing setting. Location #8, at Market and 10th Street intersection on Option B's corner, would have a 2.18% exceedance or 191 hours per year. Location #26, near the AAA building on Fell Street would have a 1.64% exceedance of 144 hours per year (as compared to 198 hours in the existing setting).

Location #9 would remain unchanged at 1.27%. Locations #30 and #31 would have exceedances of 0.8681% and 0.6849% or 76 and 60, respectively, and increases of 15 and seven hours over the existing setting.

OPTION C CONFIGURATION

In view of the hazard-criterion results of Options A and B, ten different building configurations were wind-tunnel tested on a limited basis to explore a range of building sizes and shapes with various setbacks from Market, Tenth and Mission Streets. The

purpose of this testing was to predict a particular massing configuration that might have resulted in an equivalent or improved wind environment when and if the candidate massing configuration were completely tested in a full wind-tunnel study. (The limited testing involved only testing the west-northwest wind direction as it had the majority of contributions to the hazard exceedances observed in the Options A and B results). See Appendix D for a complete description of this set of testing and results.

The analysis of the computer results indicated that only Option C had the potential of meeting the desired mitigation goals stated above. Accordingly, a full wind tunnel study was carried out on Option C for evaluation of the hazard criterion. The following describes the results of this wind-tunnel test.

For the Option C testing, eight additional surface measurement locations were added due to the nature of the configuration. Four locations (#34-37) were added on the project's plaza at Market and Tenth Streets; three locations were added on the Mission Street access area (#38-40); and, one additional point (#41) was added close to the existing point #1. Point #41 was selected just around the corner of the Fox tower plaza's location #1, as it is known that either side of a corner of a relatively taller building may experience strong wind speeds with intensified levels of gustiness or turbulence. This was the situation in the present case as will be discussed later.

Figure 3 presents the locations of the surface measurement locations #34-40 for the current testing. Additionally, Table III presents the quantitative results of the wind-tunnel test. Four wind directions were tested: northwest, west-northwest, west and southwest, as specified by the Wind Ordinance of San Francisco for south of Market Street locations. The resulting wind-tunnel data

was used as an input data set in the San Francisco Wind Ordinance Computer Code to generate predicted full-scale wind speeds and hours of exceedence for the hazard criterion evaluation.

The results indicate location #1 and #41 would experience substantial increases in the number of hours exceedence as compared to the existing setting. Location #31 would increase to 73 hours per year and location #41 to 183 hours per year as compared to approximately 61 hours hazard or safety criterion exceedance per year in the existing setting. This setting would result in a substantial worsening of an existing wind safety problem on the Fox Plaza building plaza.

Additionally, a new violation of the hazard criterion would occur at location #36 on the project's plaza. This location would experience 24 hours per year violation of the hazard (safety) criterion, whereas the existing setting has a building covering this location so that no relative comparison may be made.

On the positive side, the Option C setting does improve the wind environment in a number of areas including locations #2, 19, and 25, all of which, would come into compliance of the Wind Ordinance's hazard criterion. However, these wind environment improvements do not offset the large and substantial 200% increase (to 183 hours from 61 hours) that would occur on the Fox Plaza area, which is a heavily used pedestrian area.

Overall, the Option C setting would create 631 hours exceedence per year of the hazard criterion at the 41 measured surface locations as compared to 800 hours in the existing setting.

In summary, the Option C setting is unacceptable from both a pedestrian safety concern and San Francisco Ordinance violations

of pedestrian areas on the Fox Plaza and the Option C plaza area (location #36 as tested).

OPTION D CONFIGURATION

An additional configuration, called Option D, was provided to GSA by KMD architects for wind-tunnel testing in December, 1994. The Option D design substantially met all of the requirements of GSA. Figure 4 displays the location of points #42 to 46. Table IV presents the computer results calculated from the test data.

Comfort Criterion. The overall Option D wind environment would be approximately the same as the existing setting. In general, wind speeds around the base of the Option D building and along Fell Street from Van Ness Street to the Fox Tower plaza would be slightly less than the existing case; specifically, locations # 1, 6, 10, 11, 14, 17, 19, 20, 26 and 33 would experience decreased wind speeds of 3 to 6 mph, while other comparable locations would experience changes of 2 mph or less. These decreases would be considered only slight as only one location would come into compliance with the 11-mph pedestrian-comfort criterion (location #10 would have an 11 mph wind speed as compared to a 19 mph in the existing setting). The courtyard locations of Option D (locations # 38 to 42) would experience wind speeds that range from 8 to 10 mph. It is observed that there would be a slight reduction of wind speeds on Fell and Tenth Streets (mentioned above) at the expense of slight increases of wind speeds on Market Street near Ninth Street (locations # 24 and 25). Apparently, the position of the Option D tower alters the wind flow between the three major structures (the AAA building on Fell Street at Van Ness Street and the Fox Plaza tower and Bank of America building near the project site) to create the change of wind flow from Tenth Street to Market Street. It is noted that these modifications in the wind environment would be minor; and, the Option D wind environment

would not be substantially improved and the site still would be considered a very windy area.

As compared with the existing setting, wind speeds would decrease at 20 locations, increase at three locations and remain the same at ten locations. Wind speeds around the Option D's sidewalk areas on Market, Tenth and Mission Street would range from a low of eight mph (on Mission Street) to a high of 24 mph which would occur at the Market-Tenth Streets intersection. Wind speeds on Market Street would range from 11 to 24 mph. Overall, 26 of the total 38 locations included in the wind-tunnel test would experience wind speeds exceeding the 11-mph pedestrian-comfort criterion.

Hazard Criterion. The Option D setting would slightly improve the wind environment at the site location as compared to the existing setting except for the Fox Plaza tower plaza area (location #1) which would experience an increase in the number of hours of hazard exceedance. It would have 62 hours of exceedance as compared to 61 hours in the existing setting. This would be an unacceptable increase under the strict interpretation of the wind ordinance wording since the Option D setting would worsen the hazard conditions at the Fox Tower plaza by one hour per year.

Overall, seven of the total 33 measured locations would exceed the 26 mph for more than one hour (average speed) per year hazard criterion, as compared to 14 exceedances in the existing setting. This would represent a net decrease of seven hazard exceedance locations. Effectively, the Option D setting would shelter many of the existing hazardous conditions in the proximity of the Option D building bringing them into compliance with the hazard criterion (i.e., locations # 2, 10, 11, 13, 19, 20 and 25).

The Option D setting would create a total of about 300 hours of

hazard exceedance at the 38 locations measured as compared to a total of about 800 hours in the existing setting. This would represent a decrease in the cumulative total number of hours of hazard exceedance by 62% (by causing a decrease of 500 hours of exceedance) as compared to the existing setting. Significant decreases in hours exceeding the hazard criterion would be registered at locations # 8, 9, 10, 13, 26, 30, 31 and 33.

This option would not be allowed under the wind ordinance due to the increase in the hazardous conditions that would be created on the Fox Tower plaza (location #1). Although the increase at this location (about one additional hour per year) may be viewed as relatively small compared to the other exceedance observed (i.e., locations #8, 9 and ~~27~~ 26) it still would be in violation of the wind ordinance and accordingly would not be allowed to be built if the wind ordinance was in effect.

SEVENTH AND MISSION ALTERNATIVE

Existing Setting

Comfort Criterion. The existing setting is considered moderately windy, with 20 of the 27 test locations exceeding the 11-mph pedestrian-comfort criterion. Wind speeds (i.e., equivalent speeds exceeded 10% of the time) range from 10 to 17 mph along Market Street north of the site location, with approximately 80% of measured wind speeds exceeding the 11-mph-comfort criterion. Along Mission Street, near the site, 10 of the 11 measured wind speeds exceed the criterion. The windiest area, of the measured areas, occurs at the Seventh and Market Streets intersection, where winds range from 14 to 18 mph, all winds exceeding the comfort criterion. The courtyard area of the old Federal Court of Appeals building, directly east of the site across Seventh Street has winds of 10 to 13 mph. Lastly, wind speeds along Seventh

Street range from 10 to 18 mph, with the strong majority exceeding the 11-mph comfort criterion

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Hazard Criterion. As noted earlier, this south of Market Street area is windy and associated with previous unpleasant wind events (i.e., kiosks being blown over as well as pedestrians). Accordingly, three existing locations were found to be in violation of the hazard (safety) criterion. They are locations: #12, west of the site; #18, the southwestern corner of the Seventh and Mission Streets intersection; and lastly, #20 an open area about 200 feet west of Seventh Street and 200 feet north of Mission Street. These areas have respective hazard violations of 0.0248% (2.2 hours), 0.0141% (1.2 hours), and (5.6 hours).

Overall, a cumulative total of about nine hours per year exceedances of the 26-mph hazard criterion were measured for these three locations. No other violations were measured at the remaining 24 other locations.

Option 1 Configuration

Comfort Criterion. The overall Option 1 wind would be improved compared to that of the existing setting, with wind speeds decreasing more than 2 mph at 10 measured locations (#9, 10, 17-21, and 25-27) while increases would be experienced at two locations (#6 and 22). Nine of 10 locations with wind decreasing would come into compliance with the 11-mph comfort criterion, while both increasing wind speed locations (#6 and 22) would cause new comfort-criterion exceedances. A major improvement in the wind environment would occur at the Seventh and Mission Streets intersection where all measured locations at the intersection, and to the north along Seventh and to the east along Mission Street would be significantly reduced compared to the existing setting with all locations (#8, 9, 10, 18, 19, 26 and 27), in exceedance

of the criterion in the existing, coming into compliance in the Option 1 setting. Wind speeds along Market Street would remaining effectively unchanged. The courtyard area of the Option 1 building would experience wind speeds ranging from 8 to 11 mph; which would be acceptable for pedestrian walking but not for seating activity. (The San Francisco "Wind Ordinance" specifies a 7 mph criterion for outdoor seating activities).

Overall, as compared with the existing setting, wind speeds would decrease at 15 locations, increase at five locations, and remain the same at seven locations. The presence of the Option 1 structure would effectively shelter the Seventh and Mission Streets intersection from predominantly prevailing West to Northwest wind, while, ground-level wind speeds north of the structure (locations #6, 7 and 22) would experience wind speed increases. Overall, 13 of the total 27 locations included in the wind-tunnel test, would experience wind speeds exceeding the 11-mph pedestrian-comfort criterion.

Hazard Criterion. No violations of the hazard criterion would occur for the measured locations tested for the Option 1 building.

Option 2 Configuration

Comfort Criterion. The overall Option 2 wind environment would be less desirable compared to that of the existing setting, with wind speeds increasing more than 2 mph at four locations (#11, 14, 15 and 22) while decreases greater than 2-mph would be experienced at ~~two~~ three locations (#16, 12 and 23). Three new violations would occur (locations #8, 22 and 24), while one location (#23) inside the courtyard area of the old Federal Court of Appeals building east of Seventh Street would come into compliance of the 11-mph comfort criterion. Wind speeds on Seventh Street near the Option 2 building would remain about

the same, within 2 mph, and wind speeds on Market Street would remain the same. Wind speeds on Mission Street would remain about the same, except at the southside intersection with Julia Street, where both sides of Mission Street would increase to 19 and 21 mph as compared to 15 mph in the existing setting.

Overall, as compared with the existing setting, wind speeds would increase at 11 locations, decrease at nine locations and remain the same at seven locations. The presence of the Option 2 structure would place a relatively taller building than the surrounding existing structures and would create increases in wind speeds around the southwestern corner of the structure thus increasing wind speeds on Mission Street. Overall, 22 of the total 27 locations included in the wind-tunnel test would experience wind speeds exceeding the 11-mph pedestrian-comfort criterion.

Hazard Criterion. The presence of the Option 2 building would bring locations #12 and #20 into compliance of the hazard criterion; however, its presence also would cause three new violations to occur on Mission Street (location #14 at the southwestern base corner of the Option 2 building) and at the Seventh and Mission Streets intersection (locations #9 and #10). The violations would be: location #14 0.0373% (3.3 hours); location #9 0.0301% (2.6) hours, and , location #10 0.0216% (1.9) hours. Additionally, location #18 would remain in violation of the hazard criterion at about the same percentage of 0.0142% (1.2 hours).

Overall, a cumulative total of about nine hours per year exceedances of the 26-mph hazard criterion were measured for these four locations. No other violations were measured at the remaining 23 other locations. Four of the 27 measured locations would experience wind speeds in excess of the 27 mph hazard

criterion for more than one hour (average) speed per year. The total number of hours of exceedance would be the same as the existing setting.

OVERALL SUMMARY: ALL CONFIGURATIONS

Tenth and Market.

This study has discovered several serious safety concerns that the Options A, B and C would cause if built as wind-tunnel tested. Option D would result in a wind environment similar to the existing setting. These discoveries should be viewed as a safety issue rather than "compliance or non-compliance" to the wind ordinance issue, as there would exist real safety risks for pedestrians, caused by the wind, with gusts that can blow people over and cause physical injury.

Option A. The Option A setting would create two new hazard exceedances and also would, by 526% or 321 hours per year, increase the hazard exceedances occurring on the Fox Plaza tower plaza. Additionally, the entire north side of Market Street between Tenth and Ninth Street would likely be in exceedance of the hazard criterion.

The Option A setting is viewed as a substantially worse wind environment than the Option B setting (with 384 more hazard exceedance hours per year than the Option B setting) and as such, would be also unacceptable by "Wind Ordinance" standards.

Option B. The Option B setting would create a 244% increase in the number of hours exceeding the hazard criterion on the Fox Plaza tower's plaza on Market. If the Option B building was under the jurisdiction of the city of San Francisco, then under the San Francisco "Wind Ordinance," it is unlikely that the project would

be approved as it would cause a substantial degradation or worsening of the wind environment. Additionally, there would be increases in other hazard exceedances at various locations, that also would not be allowed under authority of the "Wind Ordinance".

Separately, there would be selective worsening of the pedestrian comfort wind environment of locations near the project site (locations #2 and #24). Several locations (#6, #14, and #16) would experience noticeable reduction in wind speed; however, they would still exceed the 11-mph comfort criterion. Location #29 would achieve compliance with the 11-mph comfort criterion.

Option C. The results indicate locations #1 and #41 would experience substantial increases in the number of hours exceedance as compared to the existing setting. Location #1 would increase to 73 hours per year and location #41 to 183 hours per year (as compared to approximately 61 hours hazard criterion exceedance per year in the existing setting). This setting would result in a substantial worsening of an existing wind safety problem on the Fox Plaza building plaza. This particular area has a well-known existing wind-safety problem.

Additionally, a new violation of the hazard criterion would occur at location #36 on the project's plaza. This location would experience 24 hours per year violation of the hazard criterion (the existing setting has a building covering this location, so no relative comparison can be made).

Several locations tested for Option C improve existing conditions (#2, 19 and 25 would come into compliance with the hazard criterion). However, such improvements cannot offset the large and substantial increase (over 200%, from 61 hours to 183 hours) that would occur at the Fox Plaza area, a heavily used pedestrian area.

In summary, Option C is unacceptable from the standpoint of the ordinance and safety.

Option D. The 10% exceeded wind speeds around the base of the Option D building and along Fell Street from Van Ness Street to the Fox Tower plaza would be slightly less than the existing case. These decreases would be considered only slight as only one location would come into compliance with the 11-mph pedestrian-comfort criterion. The courtyard locations of Option D would experience wind speeds that range from 8 to 10 mph. Overall, 26 of the total 38 locations included in the wind-tunnel test would experience wind speeds exceeding the 11-mph pedestrian-comfort criterion.

The Option D setting would slightly improve the hazardous wind environment at the site location as compared to the existing setting except for the Fox Plaza tower plaza area (location #1) which would experience an increase in the number of hours of hazard exceedance. Overall, seven of the total 33 measured locations would exceed the 26 mph for more than one hour (average speed) per year hazard criterion. The Option D setting would create a total of about 300 hours of hazard exceedance at the 38 locations measured as compared to a total of about 800 hours in the existing setting.

Significant decreases in hours exceeding the hazard criterion would be registered at several locations. This option would not be allowed under the wind ordinance due to the increase in the hazardous conditions that would be created on the Fox Tower plaza.

Seventh and Mission

Option 1. Clearly, the Option 1 configuration would be the first

choice of the four options with respect to the wind environment issue. The Option 1 setting improves to comfort-level of pedestrian wind speeds and eliminates the three existing violations of the hazard criterion which would result in no violations of the hazard criterion for this configuration.

Option 2. The Option 2 wind environment would be worsened as compared to the existing setting, in terms of pedestrian comfort levels. The hazard violations would be effectively unaltered with about nine hours per year exceedances of the hazard criterion occurring in both the Option 2 and existing settings.

CONCLUDING REMARKS

Tenth and Market

Simply put, Option's A, B and C are unacceptable under any circumstance as all would create serious safety hazards, i.e., unsafe wind speeds for pedestrians would be increased in all options. Option D would create a wind environment similar to the existing setting.

Seventh and Mission

Option 1 would improve the general wind environment while eliminating all measured hazard violations; it is clearly the superior of all configurations tested in terms of wind environment. Option 2 would only slightly worsen the existing wind environment.

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2. White, Bruce R., "Analysis and Wind-Tunnel Simulation of Pedestrian-Level Winds in San Francisco," Journal of Wind Engineering and Industrial Aerodynamics, Volume 44, pages 2353-2364, Elsevier Science Publishers, 1992.

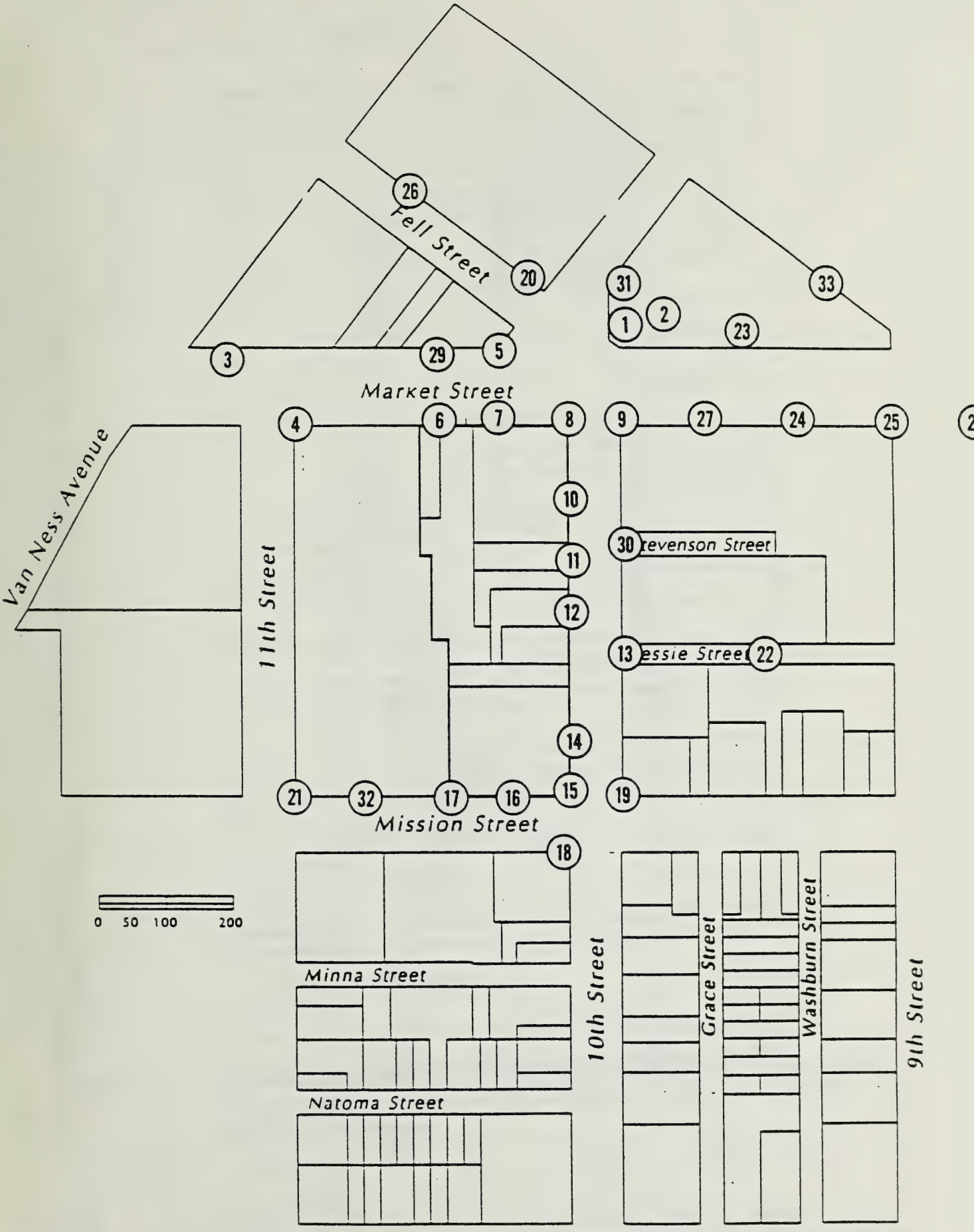


Figure 1 Location of Pedestrian-level Near Surface Measurement Points For the Tenth and Market Streets Alternative.

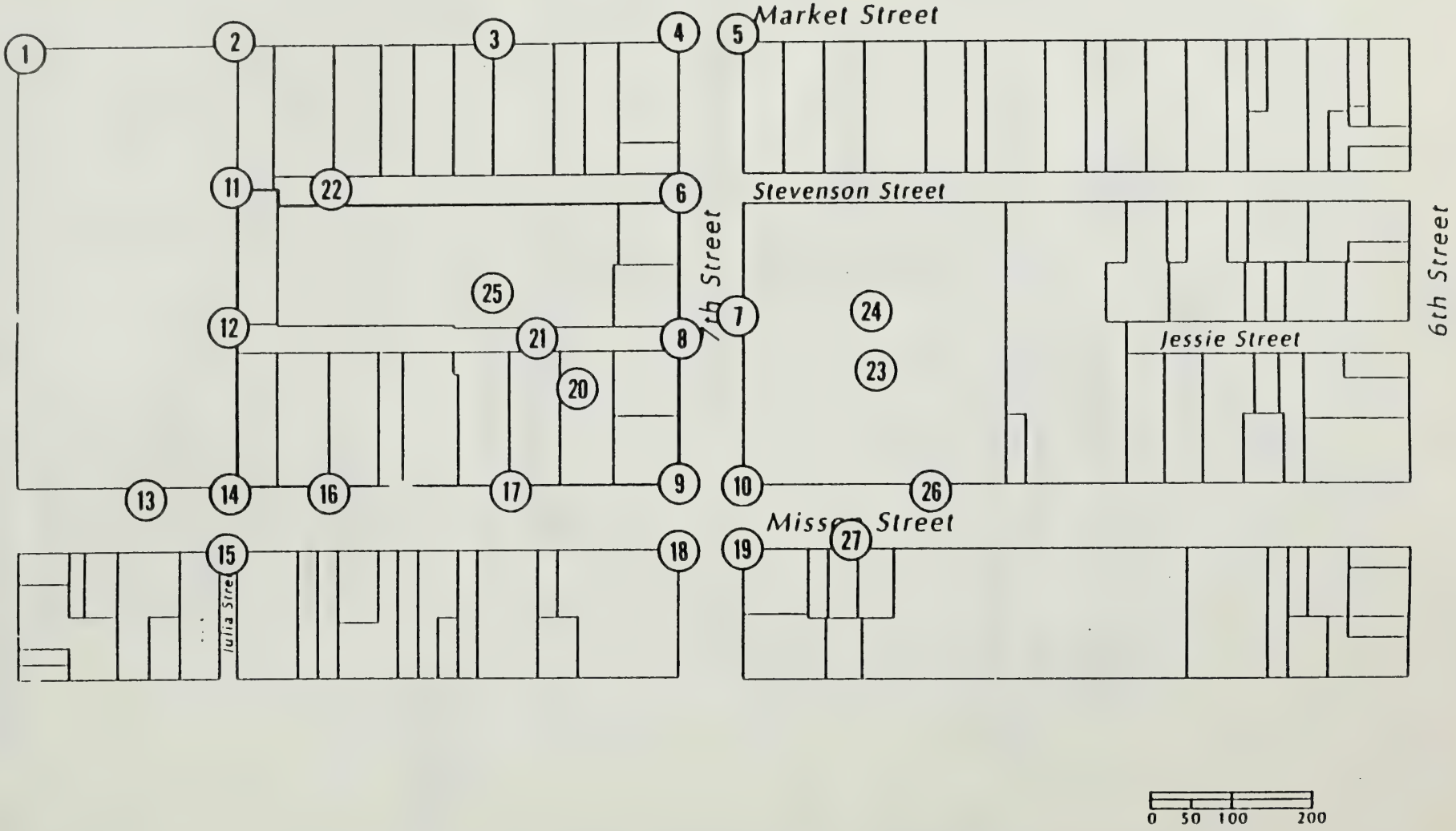


Figure 2 Location of Pedestrian-level Near Surface Measurement Points for the Seventh and Mission Streets Alternative.

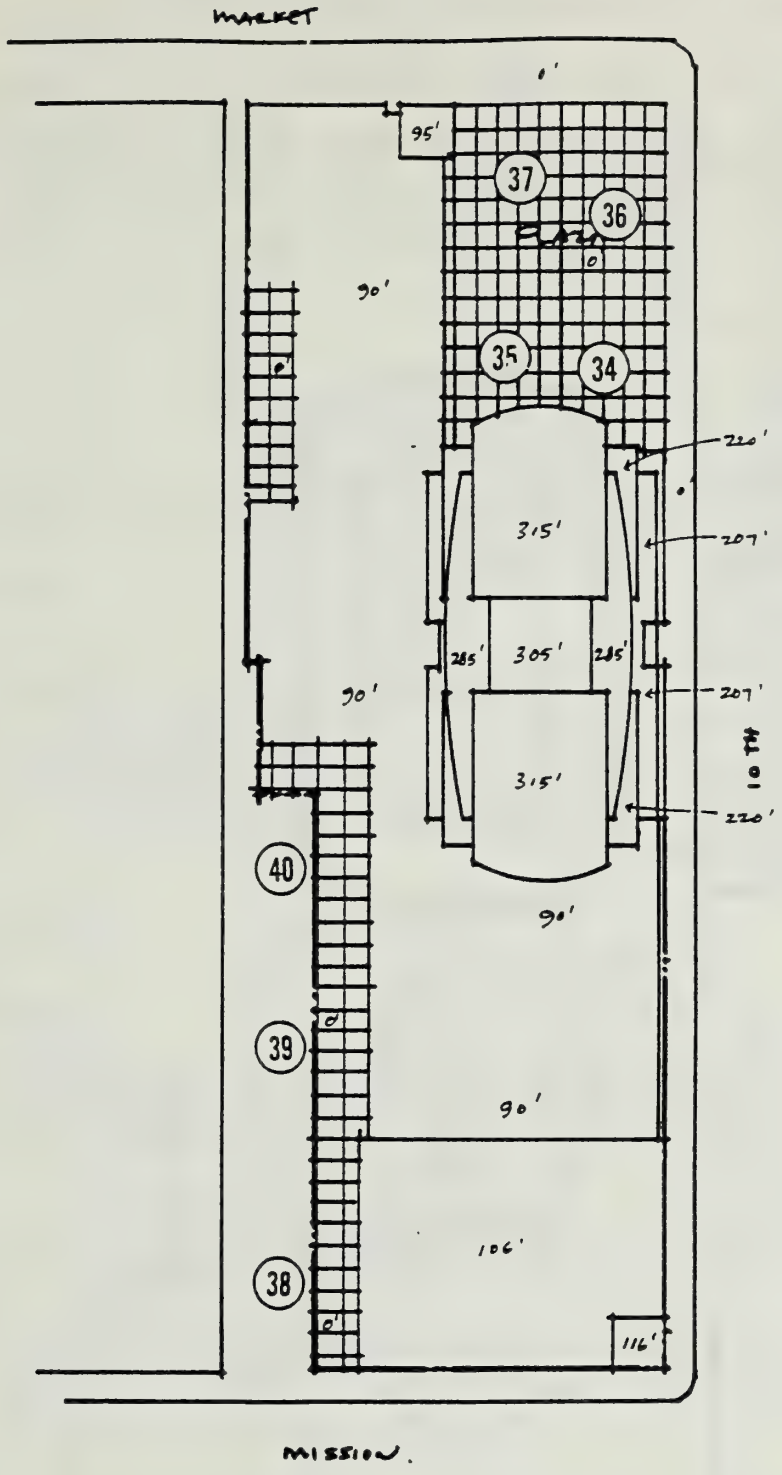


Figure 3 Location of Option C Pedestrian-level Near Surface Measurement Points 34 to 40. Location #41 is Adjacent to Location #1 on the Fox Tower Plaza Area.

OPTION C.

SAN FRANCISCO FEDERAL BUILDING

KMD 1:60 SCALE 6/21/94

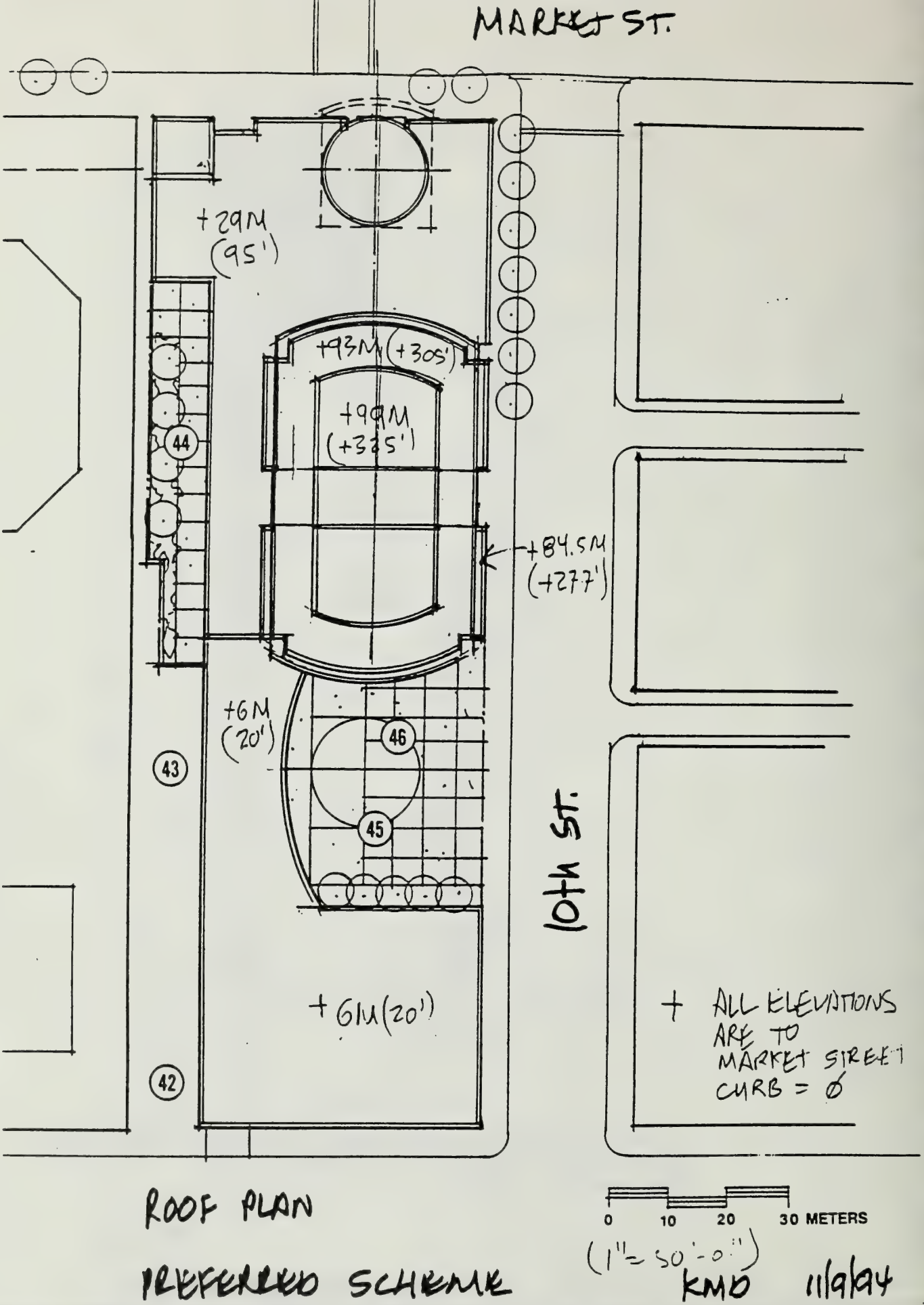


Figure 4 Location of Option D Pedestrian-level Near Surface Measurement Points 42 to 46.

SF Federal Bldg. Existing Comport Level		5/1/94			Option B SF Federal Bldg. ~~Project 1~~		5/2/94			Option A SF Federal Bldg. ~~Alternative 2~~		5/2/94		
#	Crit.	Speed	HAZ	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess
1	11	23.77		50.75	1	24.77			50.27	1	26.44		+	50.59
2	11	16.71		36.13	2	19.11		+	42.38	2	18.11		+	42.66
3	11	16.04		28.14	3	15.33			24.18	3	14.00		-	20.37
4	11	15.02		26.56	4	14.64			24.75	4	14.69			24.53
5	11	13.30		21.11	5	12.30		-	16.73	5	12.06		-	14.65
6	11	17.78		36.85	6	14.15		-	22.89	6	13.21		-	20.22
7	11	15.90		30.49	7	14.48		-	23.96	7	14.76		-	25.57
8	11	23.75		48.47	8	24.13			48.81	8	26.18		+	53.82
9	11	20.92		41.82	9	20.67			41.76	9	21.41			44.08
10	11	18.70		27.80	10	16.83		-	18.89	10	20.49		+	22.28
11	11	17.06		24.64	11	15.55		-	17.47	11	16.43			19.19
12	11	14.54		20.52	12	13.62			15.23	12	16.17		+	24.07
13	11	16.09		18.05	13	17.00			18.45	13	18.04		+	26.65
14	11	17.58		32.03	14	14.41		-	16.11	14	14.46		-	18.92
15	11	12.55		13.77	15	13.50			15.52	15	12.52			15.06
16	11	11.03		10.10	16	8.74		-	3.67	16	9.31		-	4.12
17	11	10.76		9.50	17	9.91			5.72	17	9.43		-	4.92
18	11	12.53		14.04	18	12.69			14.08	18	12.09			14.24
19	11	14.73		21.78	19	13.58		-	15.86	19	12.98		-	15.36
20	11	22.07		44.68	20	21.31			42.22	20	20.79		-	42.47
21	11	17.41		34.72	21	18.15			39.52	21	19.30		+	41.37
22	11	8.06		1.24	22	6.20		-	0.31	22	7.75			2.25
23	11	14.53		20.62	23	15.20			23.08	23	16.01		+	28.29
24	11	13.65		21.42	24	16.29		+	30.05	24	18.15		+	36.64
25	11	15.46		24.14	25	16.81		+	28.65	25	19.94		+	40.09
26	11	28.57		56.72	26	27.62			55.50	26	26.72		-	53.25
27	11	17.63		35.54	27	17.85			37.79	27	19.26		+	42.65
28	11	12.30		14.08	28	12.82			16.69	28	16.45		+	30.47
29	11	11.98		14.94	29	10.76		-	9.08	29	11.71			12.40
30	11	18.91		32.50	30	20.27		+	26.57	30	22.26		+	42.21
31	11	18.76		25.50	31	16.83		-	22.98	31	17.91			23.23
32	11	9.25		4.26	32	8.71			3.27	32	8.86			3.68
33	11	19.06		33.02	33	17.57		-	26.24	33	17.67		-	15.39

Table I Summary of 10% Exceeded Wind Speeds For the Existing, Option A and Option B Settings For the Tenth and Market Streets Alternative, Using the 11-mph Comfort Criterion.

SF Federal Bldg. Existing 5/1/94					Option B: SF Federal Bldg. ~~Project 1~~ 5/2/94					Option A: SF Federal Bldg. ~~Alternative 2~~ 5/2/94				
#	Crit.	Speed	HAZ	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess
1	36	47.20	X	0.6946	1	57.77	X	+	2.3922	1	65.63	X	+	4.3614
2	36	39.18	X	0.0206	2	38.39	X		0.0185	2	36.65	X	-	0.0120
3	36	33.29		0.0020	3	34.10			0.0063	3	32.33			0.0004
4	36	28.99		0.0000	4	28.89			0.0000	4	27.23		-	0.0000
5	36	30.85		0.0000	5	48.92		+	0.0000	5	34.96		+	0.0000
6	36	30.84		0.0000	6	25.31		-	0.0000	6	26.61		-	0.0000
7	36	41.21		0.0000	7	27.40		-	0.0000	7	37.30		-	0.0000
8	36	57.72	X	2.3888	8	56.24	X	-	2.1762	8	54.99	X	-	2.5191
9	36	51.48	X	1.2717	9	51.60	X		1.2701	9	53.20	X	+	1.6431
10	36	41.33	X	0.1843	10	40.45	X		0.0853	10	46.51	X	+	0.7273
11	36	40.46	X	0.0411	11	34.89		-	0.0035	11	36.12	X	-	0.0145
12	36	30.92		0.0000	12	54.45		+	0.0000	12	35.08		+	0.0070
13	36	44.23	X	0.3575	13	41.94	X	-	0.2257	13	43.07	X	-	0.2834
14	36	31.62		0.0000	14	34.36		+	0.0047	14	32.62		+	0.0005
15	36	31.81		0.0001	15	31.61			0.0001	15	26.53		-	0.0000
16	36	27.31		0.0000	16	28.39		+	0.0000	16	27.78			0.0000
17	36	37.56		0.0000	17	27.53		-	0.0000	17	29.17		-	0.0000
18	36	31.28		0.0000	18	29.19		-	0.0000	18	25.24		-	0.0000
19	36	38.42	X	0.0478	19	33.79		-	0.0030	19	27.45		-	0.0000
20	36	39.25	X	0.2090	20	47.79	X	+	0.2077	20	41.8	X	+	0.0243
21	36	31.12		0.0000	21	33.31		+	0.0017	21	36.44	X	+	0.0154
22	36	16.34		0.0000	22	26.54		+	0.0000	22	25.71		+	0.0000
23	36	33.86		0.0062	23	35.28		+	0.0075	23	36.64	X	+	0.0192
24	36	28.17		0.0000	24	30.98		+	0.0000	24	31.34		+	0.0000
25	36	38.66	X	0.0545	25	39.91	X	+	0.0965	25	40.77	X	+	0.1628
26	36	49.75	X	2.2606	26	47.55	X	-	1.6400	26	50.60	X		1.5482
27	36	35.31		0.0078	27	31.20		-	0.0000	27	35.15			0.0041
28	36	26.16		0.0000	28	26.52			0.0000	28	29.96		+	0.0000
29	36	22.50		0.0000	29	22.40			0.0000	29	34.41		+	0.0000
30	36	48.11	X	0.7259	30	48.94	X		0.8681	30	50.14	X	+	1.1465
31	36	41.40	X	0.2460	31	39.44	X	-	0.0638	31	42.44	X	+	0.1566
32	36	25.15		0.0000	32	26.96		+	0.0000	32	28.01		+	0.0000
33	36	47.37	X	0.6098	33	47.78	X		0.6849	33	52.54	X	+	1.4978

Table I (con't) Summary of the Percentage of the Hazard Exceedances For the Existing, Option A and Option B Settings For the Tenth and Market Streets Alternative.

Table II Summary of 10% Exceeded Wind Speeds For the Existing, Option 1 and Option 2 Settings For the Seventh and Mission Streets Alternative, Using the 11-mph Comfort Criterion.

SF Federal	Existing		5/24/94		SF Federal	Option 1			5/24/94	SF Federal	Option 2			5/24/94
#	Crit.	Speed	Comfort	% excess	#	Speed	Comfort	diff.	% excess	#	Speed	Comfort	diff.	% excess
1	11	16.22	X	*29.84*	1	15.52	X		*26.59*	1	15.78	X		*27.64*
2	11	10.16		*6.92*	2	10.07			*6.80*	2	9.51			*5.00*
3	11	14.36	X	*21.48*	3	13.29	X	-	*17.36*	3	13.64	X		*18.70*
4	11	17.25	X	*31.58*	4	16.06	X	-	*29.12*	4	16.61	X		*30.16*
5	11	13.45	X	*18.54*	5	13.09	X		*17.91*	5	13.05	X		*19.21*
6	11	10.30		*8.24*	6	16.82	X	+	*29.43*	6	11.07	X		*10.15*
7	11	12.97	X	*16.76*	7	14.96	X	+	*23.93*	7	14.09	X	+	*21.16*
8	11	10.89		*9.65*	8	10.22			*6.48*	8	13.21	X	+	*18.94*
9	11	16.23	X	*29.28*	9	10.58		-	*0.81*	9	16.65	X		*29.99*
10	11	15.68	X	*27.16*	10	10.53		-	*8.77*	10	18.08	X	+	*32.51*
11	11	7.24		*1.71*	11	8.82		+	*2.11*	11	10.13		+	*7.49*
12	11	15.61	X	*25.68*	12	15.45	X		*25.64*	12	11.46	X	-	*11.23*
13	11	12.31	X	*15.40*	13	11.83	X		*12.61*	13	11.93	X		*12.21*
14	11	14.50	X	*24.55*	14	14.20	X		*22.94*	14	21.44	X	+	*44.84*
15	11	15.07	X	*25.25*	15	15.39	X		*25.66*	15	19.33	X	+	*37.61*
16	11	15.97	X	*29.74*	16	16.23	X		*28.19*	16	11.75	X	-	*13.03*
17	11	15.99	X	*29.91*	17	7.31		-	*1.27*	17	15.07	X		*20.41*
18	11	18.10	X	*34.13*	18	8.54		-	*2.43*	18	17.26	X		*33.44*
19	11	13.78	X	*20.54*	19	8.76		-	*3.91*	19	14.09	X		*21.40*
20	11	16.04	X	*27.28*	20	9.60		-	*5.52*	20	13.71	X	-	*17.81*
21	11	15.43	X	*26.85*	21	10.92		-	*9.60*	21	12.74	X	-	*13.60*
22	11	7.93		*1.58*	22	13.03	X	+	*15.75*	22	13.47	X	+	*20.47*
23	11	12.96		*1.50*	23	14.57		+	*1.06*	23	7.54		-	*0.72*
24	11	10.29		*0.46*	24	8.06		-	*1.34*	24	11.88		+	*0.28*
25	11	14.77	X	*23.76*	25	7.71		-	*2.75*	25	13.70	X	-	*15.57*
26	11	9.10		*3.40*	26	6.37		-	*1.00*	26	10.47		+	*7.38*
27	11	15.58	X	*27.54*	27	7.79		-	*1.89*	27	14.38	X	-	*22.32*

Table II (con't) Summary of the Percentage of Hazard Exceedances For the Existing, Option 1 and Option 2 Settings For the Seventh and Mission Streets Alternative.

SF Federal	Existing		5/24/94		SF Federal	Option 1			5/24/94	SF Federal	Option 2			5/24/94
#	Crit.	Speed	HAZ	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess
1	36	38.10		0.0000	1	29.84		-	0.0000	1	28.94		-	0.0000
2	36	23.73		0.0000	2	19.64		-	0.0000	2	19.71		-	0.0000
3	36	25.07		0.0000	3	51.99		+	0.0000	3	49.35		+	0.0000
4	36	30.13		0.0000	4	29.05		-	0.0000	4	30.46			0.0000
5	36	30.34		0.0000	5	22.17		-	0.0000	5	48.12		+	0.0000
6	36	23.62		0.0000	6	31.26		+	0.0000	6	24.78		+	0.0000
7	36	32.22		0.0001	7	34.89		+	0.0064	7	30.55		-	0.0000
8	36	21.95		0.0000	8	18.85		-	0.0000	8	24.29		+	0.0000
9	36	33.91		0.0035	9	23.68		-	0.0000	9	37.18	X	+	0.0301
10	36	33.51		0.0014	10	24.71		-	0.0000	10	37.19	X	+	0.0216
11	36	24.18		0.0000	11	17.42		-	0.0000	11	28.39		+	0.0000
12	36	37.25	X	0.0248	12	35.28		-	0.0080	12	27.55		-	0.0000
13	36	23.84		0.0000	13	25.10		+	0.0000	13	26.19		+	0.0000
14	36	30.98		0.0000	14	33.55		+	0.0025	14	39.16	X	+	0.0373
15	36	32.08		0.0001	15	30.97		-	0.0000	15	35.75		+	0.0066
16	36	30.62		0.0000	16	31.13			0.0000	16	33.97		+	0.0064
17	36	31.60		0.0001	17	21.70		-	0.0000	17	35.62		+	0.0097
18	36	36.57	X	0.0141	18	24.21		-	0.0000	18	36.29	X		0.0142
19	36	29.78		0.0000	19	21.12		-	0.0000	19	25.93		-	0.0000
20	36	39.03	X	0.0644	20	21.49		-	0.0000	20	35.11		-	0.0075
21	36	30.61		0.0000	21	24.01		-	0.0000	21	31.14			0.0000
22	36	22.18		0.0000	22	33.69		+	0.0031	22	27.84		+	0.0000
23	36	15.16		0.0000	23	27.25		+	0.0000	23	15.60			0.0000
24	36	15.69		0.0000	24	21.37		+	0.0000	24	13.19		-	0.0000
25	36	28.82		0.0000	25	17.80		-	0.0000	25	32.87		+	0.0007
26	36	24.23		0.0000	26	20.92		-	0.0000	26	24.61			0.0000
27	36	27.91		0.0000	27	23.58		-	0.0000	27	32.71		+	0.0000

Table III Summary of the Hours of Exceedance of Hazard Criterion For The Option C Setting Compared to the Existing Setting For The Tenth and Market Street Alternative. The Comfort Criterion Calculations Were Not Analyzed For This Option.

TableIII Hazard Criterion Evaluation for Option C and Existing Setting						
S. F. 7/24/94 Federal Bldg.		Existing		Option C		
#	Crit.	HAZ	*Ex. Hours*	HAZ	diff.	*Ex. Hours*
1	36	X	*60.85*	X	+	*73.40*
2	36	X	*1.81*		-	*0.00*
3	36		*0.17*		-	*0.00*
4	36		*0.00*		-	*0.00*
5	36		*0.00*		+	*0.11*
6	36		*0.00*		+	*0.00*
7	36		*0.00*		+	*0.00*
8	36	X	*209.26*	X	-	*161.67*
9	36	X	*111.40*	X	-	*4.33*
10	36	X	*16.15*	X		*15.53*
11	36	X	*3.60*	X	+	*4.33*
12	36		*0.00*		-	*0.00*
13	36	X	*31.32*	X	-	*5.05*
14	36		*0.00*		-	*0.00*
15	36		*0.00*		-	*0.00*
16	36		*0.00*		-	*0.00*
17	36		*0.00*		-	*0.00*
18	36		*0.00*		-	*0.00*
19	36	X	*4.19*		-	*0.00*
20	36	X	*18.31*	X	+	*8.69*
21	36		*0.00*			*0.00*
22	36		*0.00*		+	*0.00*
23	36		*0.54*		-	*0.00*
24	36		*0.00*		+	*0.00*
25	36	X	*4.77*		-	*0.62*
26	36	X	*198.03*	X	-	*78.86*
27	36		*0.68*		-	*0.00*
28	36		*0.00*		-	*0.00*
29	36		*0.00*			*0.00*
30	36	X	*63.59*	X	-	*43.15*
31	36	X	*21.55*	X	-	*5.47*
32	36		*0.00*		-	*0.00*
33	36	X	*53.42*	X	-	*22.07*
34	36		*N/A*		+	*0.00*
35	36		*N/A*		+	*0.00*
36	36		*N/A*	X	+	*24.49*
37	36		*N/A*		+	*0.08*
38	36		*N/A*		+	*0.00*
39	36		*N/A*		+	*0.00*
40	36		*N/A*		+	*0.00*
41	36	X	*60.85*	X	+	*183.17*

Table IV Summary of 10% Exceeded Wind Speeds for the Option D Setting Compared to the Existing Setting for the Tenth and Market Streets Alternative, Using the 11-mph Comfort Criterion

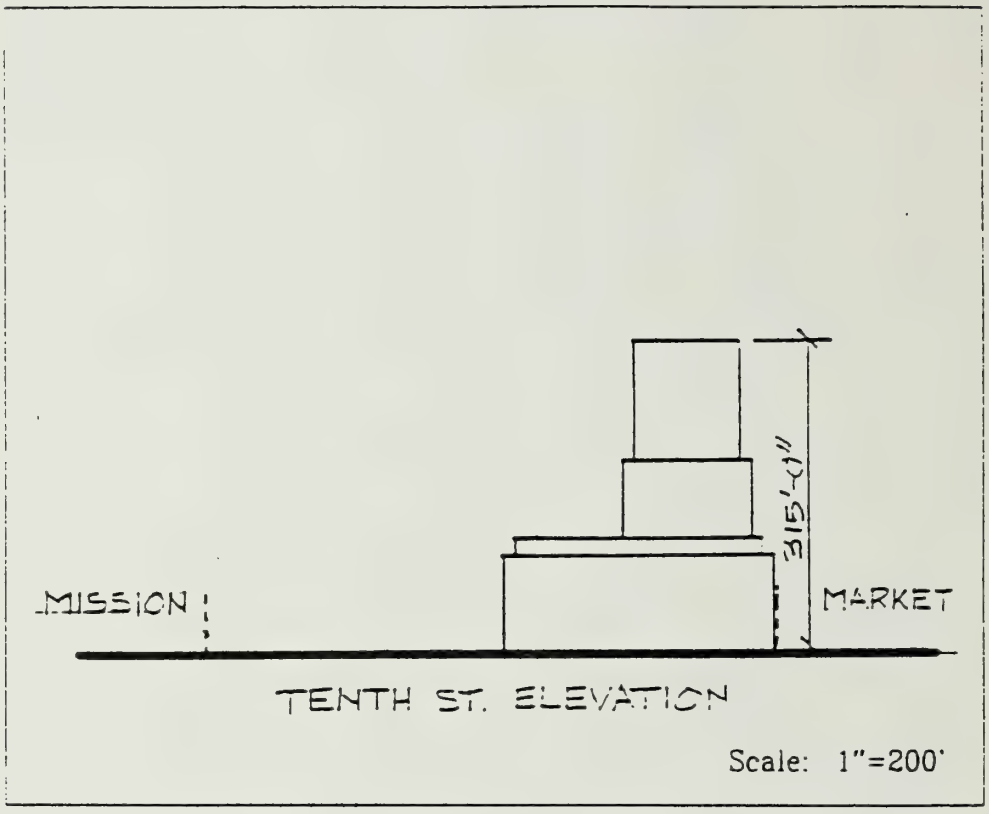
SF Federal Bldg. Existing Comfort Level 5/1/94					SF Option D Federal Bldg. 12/22/94				
#	Crit.	Speed	Comfort	% excess	#	Speed	Comfort	diff.	% excess
1	11	23.77	X	50.75	1	21.0633	X	-	41.6746
2	11	16.71	X	36.13	2	16.3732	X		32.1576
3	11	16.04	X	28.14	3	14.4852	X	-	21.8003
4	11	15.02	X	26.56	4	14.8286	X		23.6628
5	11	13.30	X	21.11	5	12.74	X		19.5266
6	11	17.78	X	36.85	6	14.5984	X	-	23.9821
7	11	15.90	X	30.49	7	14.3396	X	-	22.6108
8	11	23.75	X	48.47	8	23.9767	X		50.0854
9	11	20.92	X	41.82	9	19.4146	X	-	38.279
10	11	18.70	X	27.80	10	10.743		-	9.23101
11	11	17.06	X	24.64	11	13.0734	X	-	17.4038
12	11	14.54	X	20.52	12	15.0007	X		24.4617
13	11	16.09	X	18.05	13	16.1399	X		28.526
14	11	17.58	X	32.03	14	13.4474	X	-	19.4595
15	11	12.55	X	13.77	15	10.7602		-	9.31752
16	11	11.03	X	10.10	16	9.36182		-	4.05809
17	11	10.76		9.50	17	8.03458		-	2.84764
18	11	12.53	X	14.04	18	12.1808	X		13.3891
19	11	14.73	X	21.78	19	11.5968	X	-	11.7786
20	11	22.07	X	44.68	20	18.9603	X	-	37.395
21	11	17.41	X	34.72	21	17.7982	X		33.387
22	11	8.06		1.24	22	7.53724			1.352
23	11	14.53	X	20.62	23	14.8623	X		21.732
24	11	13.65	X	21.42	24	15.1854	X	+	27.46
25	11	15.46	X	24.14	25	16.9654	X	+	29.316
26	11	28.57	X	56.72	26	25.4233	X	-	48.193
27	11	17.63	X	35.54	27	17.7931	X		38.22
28	11	12.30	X	14.08	28	12.1093	X		16.252
29	11	11.98	X	14.94	29	10.9974			9.9911
30	11	18.91	X	32.50	30	19.1358	X		38.209
31	11	18.76	X	25.50	31	16.7722	X	-	21.745
32	11	9.25		4.26	32	8.3511			3.1291
33	11	19.06	X	33.02	33	13.9462	X	-	13.609
42	11	N/A		N/A	42	7.57085			0.48902
43	11	N/A		N/A	43	7.62847			1.3053
44	11	N/A		N/A	44	8.46753			3.7275
45	11	N/A		N/A	45	9.51875			5.6997
46	11	N/A		N/A	46	7.66274			0.54537

Table IV (con't) Summary of the Hours of Exceedance of Hazard Criterion For the Option D Setting Compared to the Existing Setting for the Tenth and Market Streets Alternative.

Hazard Criterion Evaluation for Option D and Existing Setting					
S. F. GSA	12/22/94	Existing		Option D	
#	Crit.	HAZ	*Ex. Hours*	HAZ	*Ex. Hours*
1	36	X	*60.85*	X	*61.81*
2	36	X	*1.81*		*0.68*
3	36		*0.17*		*0.00*
4	36		*0.00*		*0.00*
5	36		*0.00*		*0.00*
6	36		*0.00*		*0.00*
7	36		*0.00*		*0.00*
8	36	X	*209.26*	X	*131.28*
9	36	X	*111.40*	X	*21.25*
10	36	X	*16.15*		*0.01*
11	36	X	*3.60*		*0.00*
12	36		*0.00*		*0.00*
13	36	X	*31.32*		*0.01*
14	36		*0.00*		*0.00*
15	36		*0.00*		*0.00*
16	36		*0.00*		*0.00*
17	36		*0.00*		*0.00*
18	36		*0.00*		*0.00*
19	36	X	*4.19*		*0.00*
20	36	X	*18.31*		*0.01*
21	36		*0.00*		*0.00*
22	36		*0.00*		*0.00*
23	36		*0.54*		*0.04*
24	36		*0.00*		*0.00*
25	36	X	*4.77*		*0.84*
26	36	X	*198.03*	X	*66.26*
27	36		*0.68*		*0.00*
28	36		*0.00*		*0.00*
29	36		*0.00*		*0.00*
30	36	X	*63.59*	X	*1.57*
31	36	X	*21.55*	X	*3.52*
32	36		*0.00*		*0.00*
33	36	X	*53.42*	X	*12.75*
42	36		*N/A*		*0.00*
43	36		*N/A*		*0.00*
44	36		*N/A*		*0.00*
45	36		*N/A*		*0.00*
46	36		*N/A*		*0.00*

APPENDIX A: OPTIONS A TO D & 1 AND 2

SAN FRANCISCO FEDERAL OFFICE BUILDING

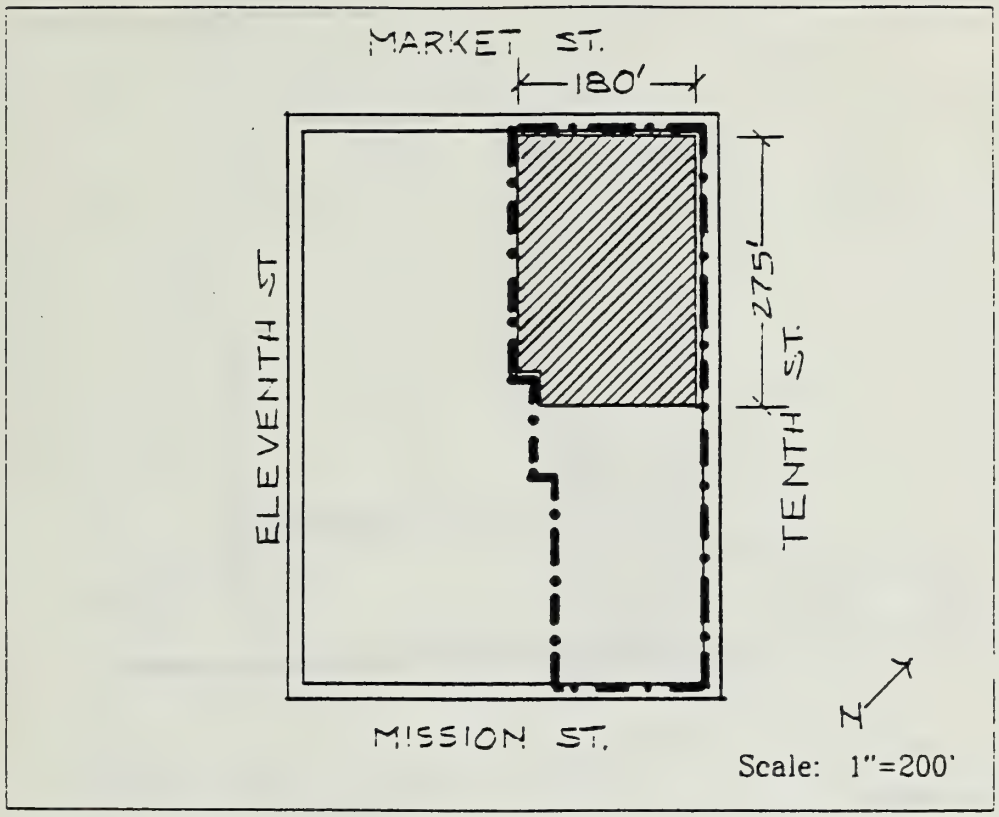


TENTH STREET ELEVATION

Tenth & Market Site: "The Proposed Site"

OPTION A: Proposed Initial Site Utilization

SAN FRANCISCO FEDERAL OFFICE BUILDING

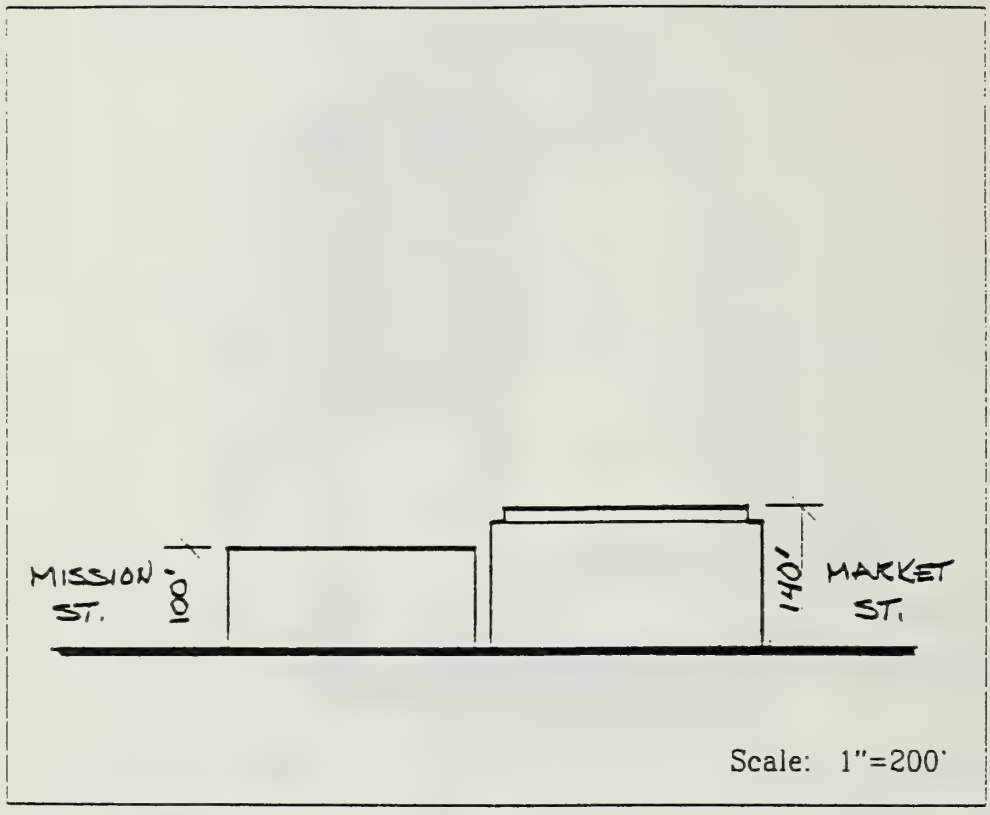


SITE PLAN

Tenth & Market Site: "The Proposed Site"

OPTION A: Proposed Initial Site Utilization

SAN FRANCISCO FEDERAL OFFICE BUILDING

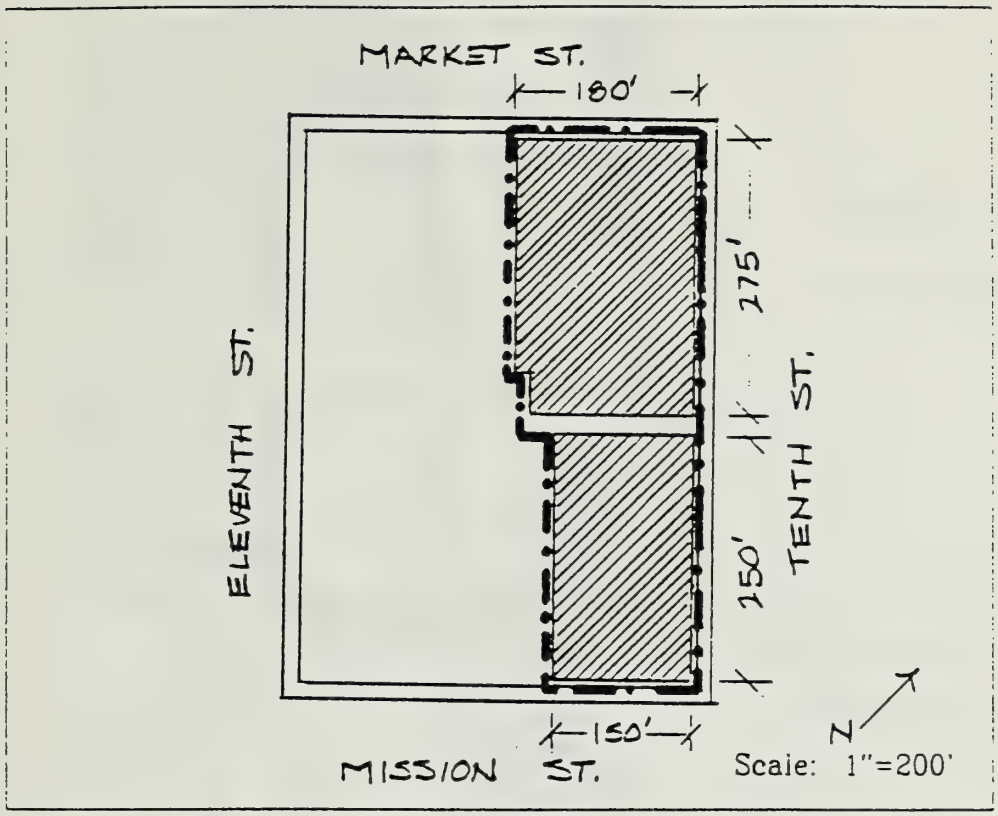


TENTH STREET ELEVATION

Tenth & Market Site: "The Proposed Site"

OPTION B: Alternative Site Utilization

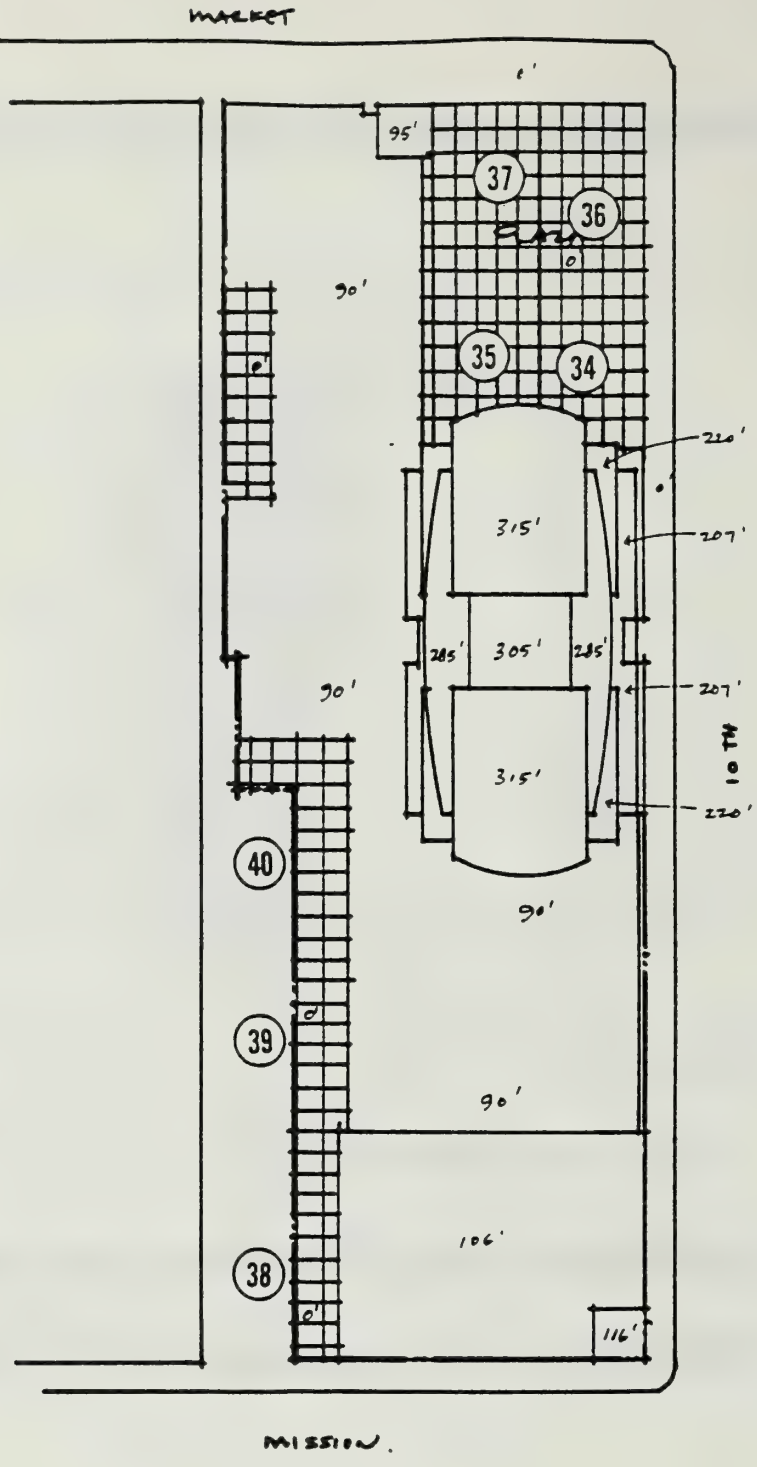
SAN FRANCISCO FEDERAL OFFICE BUILDING



SITE PLAN

Tenth & Market Site: "The Proposed Site"

OPTION B: Alternative Site Utilization

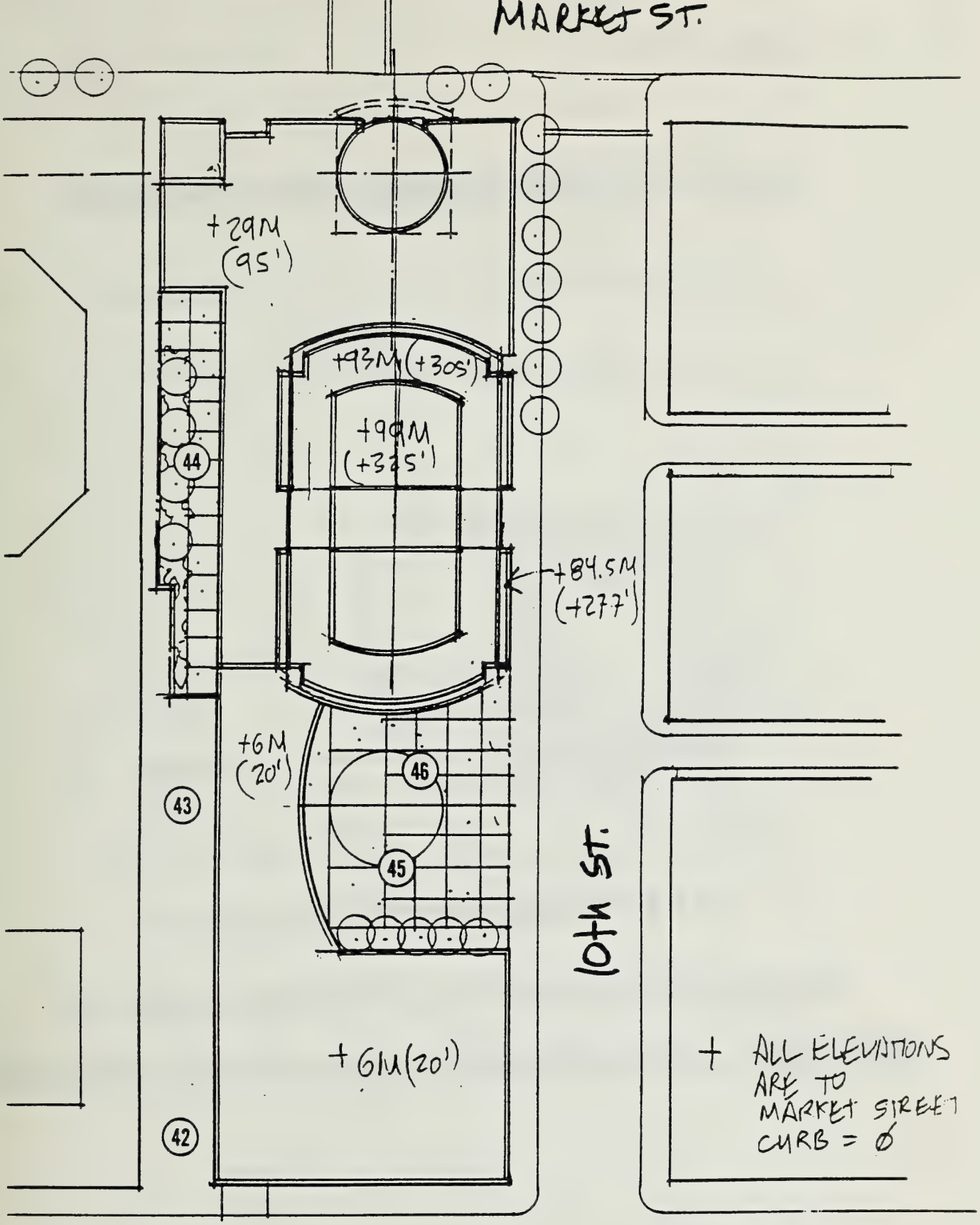


OPTION C

OPTION C.

SAN FRANCIS-CO FEDERAL BUILDING

KMD 1:60 SCALE 6/21/94



ROOF PLAN

OPTION D

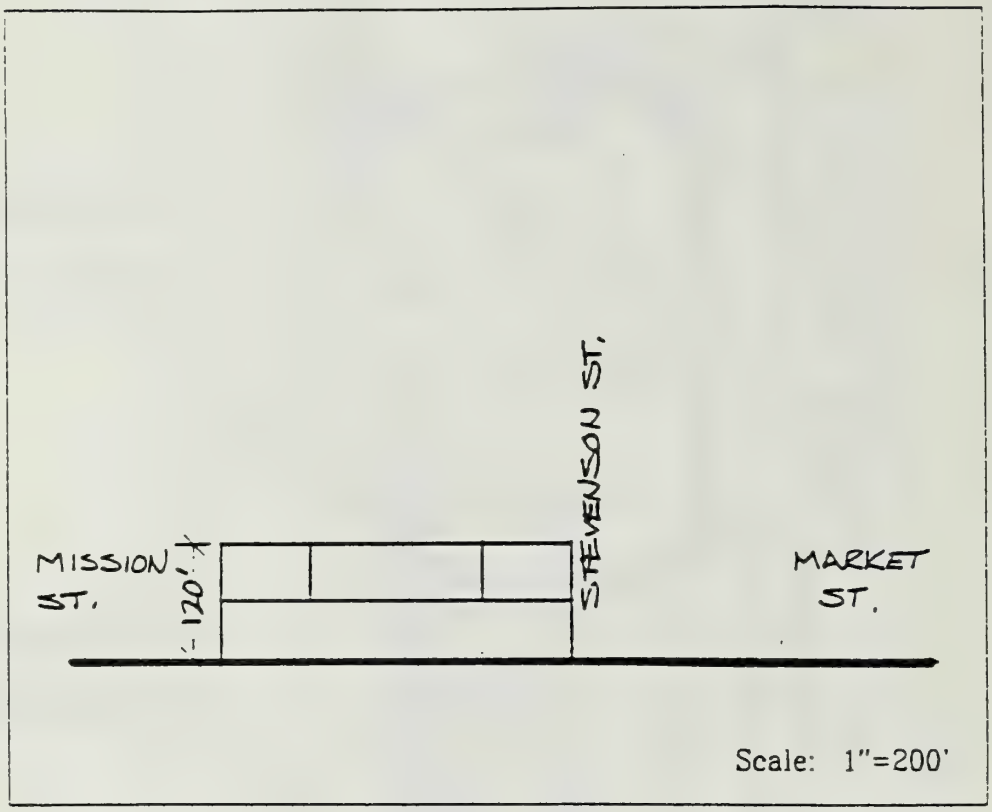
0 10 20 30 METERS

(1" = 50'-0")

PREFERRED SCHEME KMD 11/9/94

SAN FRANCISCO FEDERAL BUILDING PRELIMINARY PROGRAM

SAN FRANCISCO FEDERAL OFFICE BUILDING

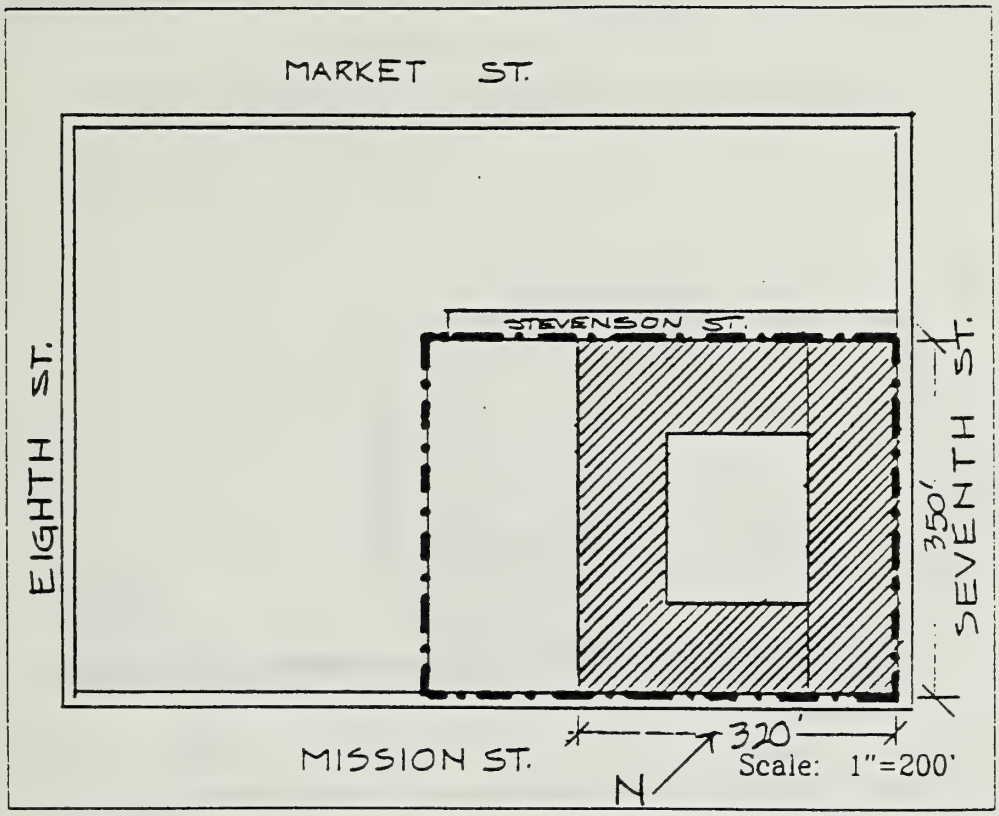


SEVENTH STREET ELEVATION

Seventh & Mission Site: "The Greyhound Site"

OPTION 1: Develop Site w/ Daylight and Natural Ventilation

SAN FRANCISCO FEDERAL OFFICE BUILDING

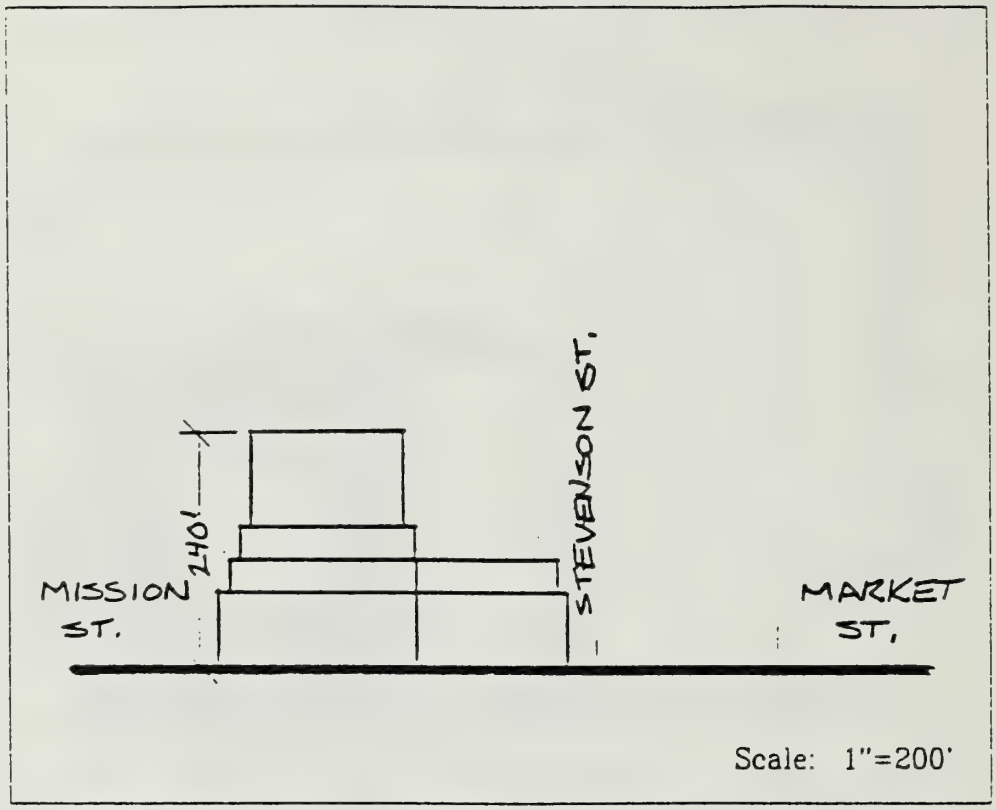


SITE PLAN

Seventh & Mission Site: "The Greyhound Site"

OPTION 1 : Develop Site w/ Daylight and Natural Ventilation

SAN FRANCISCO FEDERAL OFFICE BUILDING

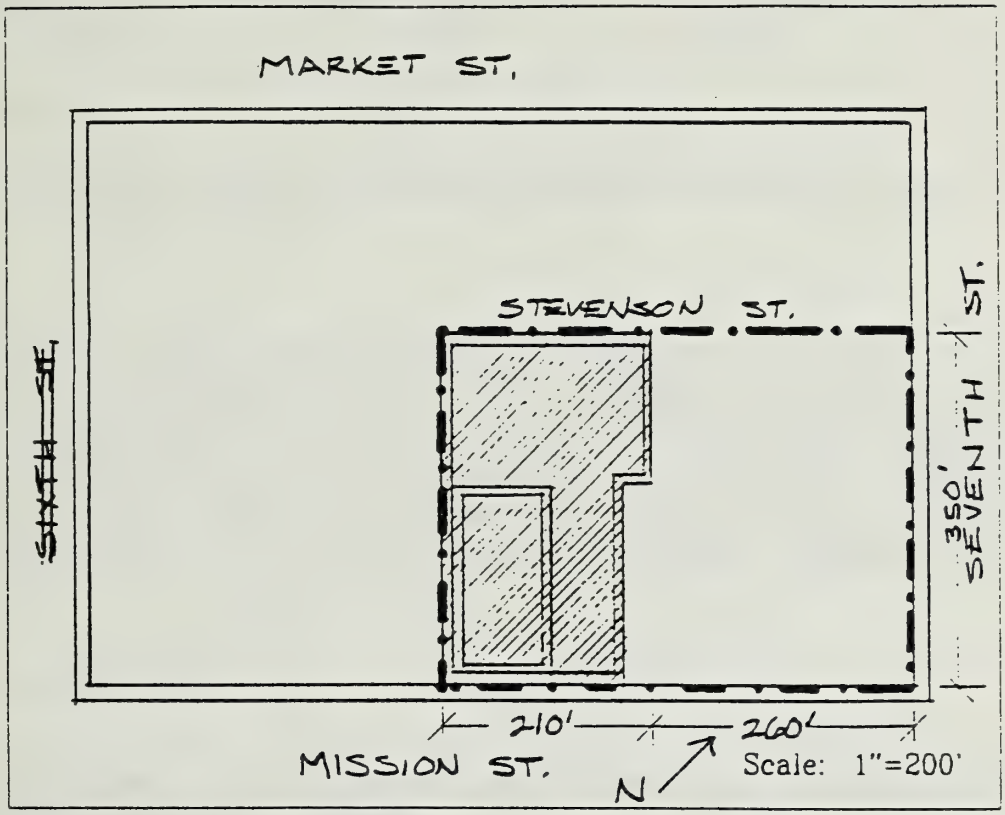


SEVENTH STREET ELEVATION

Seventh & Mission Site: "The Greyhound Site"

OPTION 2 : Develop Southern Portion of the Greyhound Site

SAN FRANCISCO FEDERAL OFFICE BUILDING



SITE PLAN

Seventh & Mission Site: "The Greyhound Site"

OPTION2 : Develop Southern Portion of the Greyhound Site

APPENDIX B: WIND-TUNNEL ANALYSIS

Eighth International Conference on Wind Engineering
8 — 12 July 1991
The Boundary Layer Wind Tunnel Laboratory • The University of Western Ontario
London, Canada • N6A 5B9

Analysis and wind-tunnel simulation of pedestrian-level winds in San Francisco

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Abstract

The city of San Francisco enacted a pedestrian-level wind ordinance as part of its city and county municipal code in 1985. The purpose of this paper is to present in engineering detail the wind tunnel testing procedure and associated analysis which allows scaling of the wind-tunnel measurements. This technique uses site specific meteorological weather data, coupled with the wind-tunnel data, to predicted full-scale wind speeds. The full-scale speeds are presented in terms of 10% exceeded equivalent wind speeds as required by the wind ordinance. Also, a description of the wind-tunnel facility in which many of the pedestrian-level wind studies are carried out is presented.

1. INTRODUCTION

The San Francisco Downtown Plan, adopted in 1985 by the city of San Francisco, established separate criteria for comfort in areas of substantial pedestrian use, for comfort in public seating areas, and for wind safety.

The wind intensity is defined in terms of equivalent wind speed. This term denotes wind speed averaged over an hour (hourly mean windspeed), modified to include the level of gustiness, or turbulence, expected on site. The equivalent wind speed as calculated assumes an unaltered wind with an inherent turbulence intensity of 15% of the hourly mean windspeed value. The turbulence intensity is defined as the root mean square (rms) of the instantaneous deviations from the value of the mean velocity, divided by the mean velocity value. When turbulence intensity at a measurement point is greater than 15%, the mean velocity is multiplied by two times the turbulence intensity plus 0.7 to create its equivalent windspeed. This equation follows from relationships developed by Hunt et al. (1976) and Jackson (1978) in which winds with different turbulence intensities were compared to each other for their effects on pedestrians.

The comfort criterion for seating areas is 7 mph (3.1 m/s) equivalent wind to be exceeded not more than 10% of the time year round between the hours of 7 a.m. and 6 p.m. The wind speed criterion is based on wind effects summarized in Penwarden (1973), Melbourne (1978), and Arens (1981). The time interval, chosen by the Department of City Planning (DCP), represents the period when most of the population is exposed to the wind; the 10% figure also was chosen by DCP. It is essentially an environmental quality decision, based on Penwarden's study (1973) of wind complaints in shopping centers. Penwarden found that substantial complaints occurred when the limit of comfortable wind speed was exceeded more than 10% of the time.

The comfort criterion for pedestrian areas is an 11 mph (4.9 m/s) equivalent wind to be exceeded not more than 10% of the time year round between the hours of 7 a.m. and 6 p.m. The wind speed part of this criterion is based on the original 11 mph (4.9 m/s) limit used by Penwarden (1973); Hunt, et al. (1976); Melbourne (1978); and others. The time interval and the 10% exceedance figure are based on the same logic as the criterion for seating areas.

For the two comfort criteria described above, the averaging period for the mean velocity is on the order of a minute, the length of time over which U.S. Weather Bureau observers make their hourly observations. This interval is sufficiently close to the length of time that the wind actually takes to affect people's comfort that the Weather Bureau data can be used directly to satisfy these criteria.

In the Downtown Plan, the criterion for wind safety is specified in terms of true hourly wind speeds instead of the one-minute averaged wind speeds of the U.S. Weather Bureau. Based on a relationship taken from Lawson (1978), a 26-mph (12 m/s) hourly-averaged wind will be equivalent to a 3-second gust that reaches the 44 mph (20 m/s) hazard limit. Similarly, that 44 mph (20 m/s) gust is reached when the one-minute averaged speed is 36 mph (16 m/s). This 36 mph (16 m/s) value is used to test safety compliance with the Downtown Plan.

The detailed history of development of San Francisco's wind ordinance is presented by the ordinance authors in Arens et al. (1989). Included in our discussion is the underlying motivation for usage of the 10% exceeded wind-speed value, the early problems encountered with the acquisition of reasonable site-specific weather data (which still presents a problem of a lesser degree today for the hazard criterion), and the suggested correction factors to the weather data due to influence of local building effects on the anemometer data.

The Appendix presents the original wording of the wind ordinance which is taken from Section 148 of the *City and County of San Francisco Municipal Code: Planning Code Volume I*. Additional amendments to the wind ordinance also have been made (Ordinance 537-88, Approved December 12, 1988, amended by Ordinance 79-89, Approved March 24, 1989; and Ordinance 115-90, Approved April 6, 1990). The guidelines and testing procedures have remained same; however, the amendments effectively have given more latitude to city officials in granting, what this author thinks, are reasonable exceptions to proposed building designs that cannot meet the precise requirements of ordinance. Although some of the specific legal and technical requirements for compliance within the city ordinance have been relaxed, the analysis and required wind-tunnel simulation of pedestrian-level wind are still required and this is the focus of this paper.

2. WIND-TUNNEL FACILITIES

An environmental wind tunnel was built for testing natural atmospheric boundary layer flows past surface objects such as buildings and other structures. The tunnel has an overall length of 72 ft. (22 m), a test section of 4 ft. (1.2 m) wide by 6 ft. (1.8 m) high, and has an adjustable false ceiling. Wind speeds within the tunnel can be varied from 2 to 22 mph or 1 to 10 m/s.

The wind tunnel is an open-return type with the fan blades pulling the air through the tunnel as illustrated in Figure 1. The tunnel is composed of an entrance section, a flow development section, a test section with a three-dimensional remote control probe traversing system, a diffuser section, and a 75-HP DC motor.

The entrance section (see Figure 1, section A-A) is bell-mouth shaped to produce a contraction area ratio to minimize the freestream turbulence level. The contraction area is followed by a commercially available air filter which screens out airborne particles above a few microns in diameter and reduces large-scale pressure fluctuations. After the filter, a honeycomb flow straightener is used to further reduce large-scale turbulence.

The 40-foot-long (12 m) flow development section has walls that diverge to reduce the streamwise pressure gradient. The false ceiling of the section continues this process and provides zero-pressure-gradient flow. The floor is easily removable, hence different false floors with different relative roughnesses can be tested. Two roughness element models are currently being used. One consists of wooden wedges attached to the floor panels and the other consists of small rectangular wooden blocks placed on smooth floor panels. Fairings for

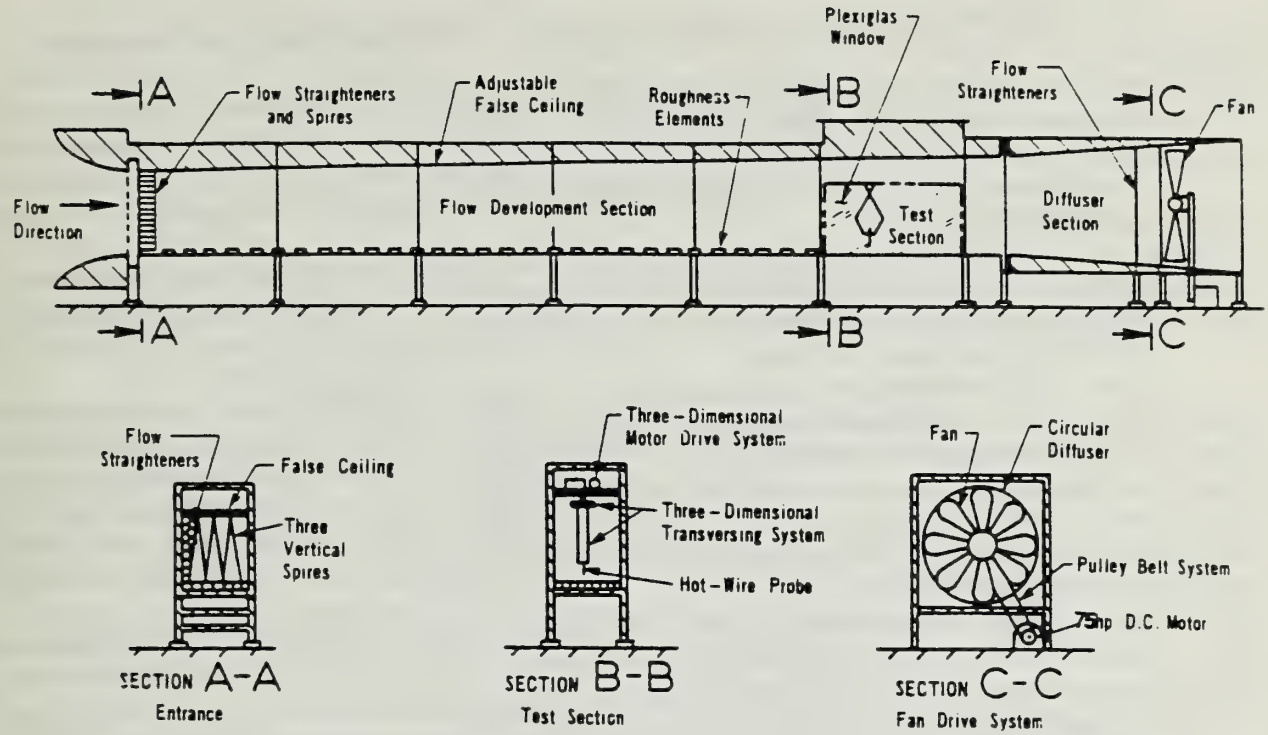


Figure 1. Schematic diagram of the UC Davis Atmospheric Boundary-Layer Wind Tunnel showing the entrance (Section A-A), the test area (Section B-B) and the diffuser-drive system (Section C-C).

smooth-wall tests are placed at the corners of the tunnel to reduce secondary flow effect. Removable spires are placed directly downstream of the flow straightener at the entrance of the flow development section.

The test section (see Figure 1, section B-B), is 12 feet (3.7 m) in streamwise length and 5.5 feet (1.7 m) high by 4 feet (1.2 m) wide in cross section and also has an adjustable ceiling to allow zero-pressure-gradient flow over its length. Access to the test section is through a framed Plexiglas door which serves as one of two vertical Plexiglas walls. Door leakage is eliminated by an O-ring seal of internally pressurized surgical tubing that is mounted between the door and its metal frame.

In the test section a three-dimensional probe traversing system can be moved over a large part of the floor area. The probe traverse mechanism is specially designed to provide precision sensor placement, small flow disturbance, and high speed in moving the sensor from point to point. All three dimensions of motion are independent and tracked by precision potentiometers rigidly coupled to the drive trains.

The diffuser section (see Figure 1 section C-C) has an expansion area ratio that provides a continuous transition from the rectangular cross section to a circular cross section for the fan.

The eight-bladed, fixed-pitch, 6-foot (1.8 m) diameter fan (see Figure 1, section C-C) is driven by a 75-HP, shunt-wound field DC motor specially designed for use with a full-wave-phase controlled power supply. The motor and fan are coupled by a dual belt and pulley drive system. The fan shroud also serves as a final diffuser section and provides more efficient pull of the air flow through the tunnel.

3. THE MODEL AND DIGITAL DATA PROCESSING TECHNIQUE

A one inch equals 50 ft. (15 m) scale (600:1) model of the area surrounding the proposed project for several thousand feet in all directions is tested in the wind tunnel. The model is usually capable of having several configurations including: the existing setting, the project setting, and as many alternatives as needed or required, each available for separate wind tunnel testing.

For each wind direction tested in the tunnel, the model area represents a minimum distance of 6000 ft. (1.8 km) in the direction of the wind (approximately 4000 ft. (1.2 km) upwind and 2000 ft. (0.6 km) downwind of the proposed site) and 2400 ft. (0.7 km) in the direction normal to the wind.

The atmospheric-boundary-layer flow over downtown areas is simulated by an upwind network of turbulence generators. The wind tunnel's false ceiling is adjusted to provide a zero-pressure-gradient downstream flow. The adjustment of the flow to zero-pressure-gradient flow is known to properly model atmospheric boundary layers near the surface of earth (Cermak et al., 1966; Cermak and Arya, 1970; Cermak, 1971, 1975 a and b). The long flow development length allows a naturally turbulent boundary layer to develop and properly model the full-scale flow.

Wind-speed measurements are usually made at 25 to 40 surface locations using a hot-wire anemometer. Hot-wire measurements made close to the surface have an inherent uncertainty of ±5% of the true values. Calibration measurements are made before the hot-wire experiments. The calibration is accomplished by means of a Thermo-System Incorporated (TSI) model #1126 hot-wire anemometer calibrator especially designed for low wind speeds. The calibration is accurate to within 2%. The flow above the model is adjusted to nearly the same wind speed, approximately 9 mph (3.5 m/s) for all experiments. The projected near-surface wind speeds are calculated from the hot-wire measurements.

The technique used to process the data is to digitize the analog data (this process is referred to as A to D, or A/D) and record it on the IBM personal computer. Specifically, the anemometer analog signals are first passed through an analog signal conditioning system, digitized, and processed in an IBM AT personal computer. The signals from the conditioning system are filtered by a Krohn-Hite anti-aliasing filter, model 3322, which is operated as a single-channel eighth-order low-pass filter. The filtered output signal is digitized with an IBM DACA board data acquisition system. The execution of the A/D conversion is synchronized to less than one nanosecond time shift, thus allowing digital software computer calculations to be made without loss of accuracy.

An examination of the anemometer signals with the Nicolet digital spectrum analyzer show that the turbulence frequencies typically are less than 350 Hz. Typical A/D conversion rates are 1000 samples/s for 30 seconds, which exceeded the Nyquist requirement (Bendat and Piersol, 1971; Freymuth, 1977). The 30,000 individual voltage samples are typically then averaged and the root mean square calculated for each wind speed measurement. The process of data acquisition and computer reduction takes about a minute for each measurement and is performed with an accuracy of 99.95%.

4. METEOROLOGICAL DATA AND TESTING METHODOLOGY

For each surface wind-speed measurement made in the wind tunnel it is desirable to estimate an associated full-scale wind speed. The determination of the full-scale wind speed will of course depend upon the nature of the meteorological data at the site. For San Francisco wind studies the wind ordinance requires determination of the full-scale mean wind speed exceeded 10% of the time from 7:00 a.m. to 6:00 p.m. The meteorological data used were originally taken at the weather station located on top of the old Federal Building at 50 United Plaza during the years 1945 - 1950 on an annual hourly basis for 16 equally spaced wind directions or sextodecimo wind sectors. The measurements were taken hourly and averaged

over one-minute periods. Of the 16 measured wind directions, four primary wind directions comprised the greatest frequency of occurrence as well as the majority of strong wind occurrences. These wind directions were northwesterly, west northwesterly, westerly and west southwesterly which has associated of occurrence rates of 10%, 14%, 35% and 2%, respectively, for 6:00 a.m. to 8:00 p.m.[b] The remaining 12 wind directions comprised the remaining 36% frequency of occurrence. Calm conditions occurred 2% of the time.

For each of the major wind directions the individual wind-speed value that the mean exceeded 10% of the time was determined from the meteorological data. The values of the 10% exceeded speeds were 21, 25, 21 and 18 mph for northwesterly, west northwesterly, westerly and west southwesterly winds, respectively. The 12 remaining untested wind directions had an average 10% exceeded wind speed of 15 mph.

The wind-tunnel methodology used in the testing of proposed high-rise structures was decided upon by the officials of the Environmental Review Office of the City Planning Departments and the group of wind consultants who authored the Arens et al. (1989) paper. The collective decision of the group was to wind-tunnel test only three or four specific sextodecimo wind sectors of the 16 total sectors. If a proposed project has a site location south of Market Street then four wind directions would be tested: northwest, west northwest, west and west southwest. The testing of only four of sixteen wind direction may seem inadequate; however, it does account for 61% of occurrence frequency as well as accounting for the wind directions with the strongest wind-speed magnitudes. Of the untested wind sectors the 10% exceeded wind speed average is well below the 10% exceeded wind speed averages of tested wind directions given in the above paragraph. For site locations north of Market Street in the vicinity of the downtown area the testing of only three wind directions is required: northwest, west northwest and west. In these cases it was decided that the project site would be sheltered from the west southwesterly winds by the large mass of buildings in the downtown area to the west and south of any site.

The average of the measured wind ratios for the tested wind directions (at a given position and setting) was assumed to be the mean wind ratio of the untested wind directions. The justification for this procedure is that there is a symmetry-of-sorts of the wind flow around buildings and although the technique is not 100% accurate, it does provide a reasonable estimate of the average wind speed that would occur from the untested wind directions. Thus, the weighted cumulative averaged pedestrian-level 10% exceed wind-speed calculations account for all wind directions, including those not measured in the wind tunnel.

The method used to estimate the full-scale 10% exceeded wind speed assumes the ratio of pedestrian-level wind speed to a specified reference height wind speed (both in the wind tunnel) is equal to the same ratio in full scale. The reference height used corresponds to the height of the weather station located on top of the old Federal Building, and is 132 feet high. Additionally, both the wind-speed ratios are assumed equal to power-law relationship given by Davenport (1961), i.e.,

$$\left(\frac{U_{ped.}}{U_{ref}}\right)_{Full\ Scale} = \left(\frac{U_{ped.}}{U_{ref}}\right)_{Wind\ Tunnel} = \left(\frac{z}{H_{ref}}\right)^{\alpha} \qquad (1)$$

where U_{ped} is the equivalent wind speed at pedestrian height z (approximately 6 feet), U_{ref} is equivalent wind speed at the reference height H_{ref} which is 132 feet in this case. To predict $U_{ped_{Full\ Scale}}$ one uses

[b] Unfortunately, the meteorological data was acquired in 3-hour intervals where the closest match to the wind ordinance time was 6:00 a.m. to 8:00 p.m. This time period was used in the analysis and scaling of wind-tunnel data. However, the usage of the 6:00 a.m. to 8:00 p.m. data is felt to be conservative since the wind data generally have greater wind speeds in the 6:00 to 8:00 p.m. time period than the early morning hour of 6:00 to 7:00 a.m., these being the hours not accounted for in the wind ordinance time period.

$$U_{ped_{Full\ Scale}} = U_{ped_{Wind\ Tunnel}} \left(\frac{U_{ref_{Full\ Scale}}}{U_{ref_{Wind\ Tunnel}}} \right), \tag{2}$$

or introducing the wind-tunnel freestream speed U_∞ yields,

$$U_{ped_{Full\ Scale}} = \left(\frac{U_{ped}}{U_\infty} \right)_{Wind\ Tunnel} \cdot U_{ref_{Full\ Scale}} \cdot \left(\frac{U_\infty}{U_{ref}} \right)_{Wind\ Tunnel} \tag{3}$$

where $(U_{ped}/U_\infty)_{Wind\ Tunnel}$ is defined as R, the wind-tunnel wind-speed ratio. Additionally, it was found that,

$$\left(\frac{U_\infty}{U_{ref}} \right)_{Wind\ Tunnel} = 2 \text{ or } \left(\frac{U_{ref}}{U_\infty} \right)_{Wind\ Tunnel} = 0.5 \tag{4}$$

from measurements taken in the U.C Davis wind tunnel with the model of the old Federal Building present in its pre-1950 setting.

This also may be compared to the full-scale situation, although the direct comparison between full-scale and wind-tunnel ratios involving freestream or geostrophic wind speed, $U_{Geostropic}$, is known not to be accurate. This is due to the Coriolis effects in full-scale; however, the comparison used in the present context for illustration purposes and justified by the fact that it is desired to assess the reasonableness of the wind-tunnel ratio value of 2. Accordingly,

$$\left(\frac{U_{ref}}{U_{Geostropic}} \right)_{Full\ Scale} = \left(\frac{z_{ref}}{\delta} \right)^{\alpha}_{Full\ Scale} \tag{5}$$

where z_{ref} is 132 feet, δ is the boundary-layer height over San Francisco, estimated at 1320 feet (10 times the reference height) and α is the power-law exponent equal to approximately 0.3. Thus,

$$\left(\frac{U_{ref}}{U_{Geostropic}} \right)_{Full\ Scale} = (0.1)^{0.3} = 0.501 \tag{6}$$

which has reasonable agreement with the wind-tunnel result of 0.5, see Equation (4).

Therefore, the $U_{ped_{Full\ Scale}}$ becomes

$$U_{ped_{Full\ Scale}} = 2RU_{ref_{Full\ Scale}} \tag{7}$$

Unfortunately, the data base from the old Federal Building was biased by the location of the measuring equipment. The anemometer was located 25 feet above the rooftop at the western end of the building, so that the Federal Building and other nearby buildings were near enough to cause wind accelerations and decelerations. These changes introduced systematic errors into the wind data. Correction factors have been developed from wind tunnel tests of a scale model of the old Federal Building and its environs (Ballanti, 1986). No post-1950 buildings of significance were included in the model so that it accurately represented the period 1945 - 1950 when the data were gathered. For each wind direction of interest, mean wind speed was obtained at the anemometer instrument location above the building while simultaneous measurements were made at the identical height of 132 feet above open ground away from the influence of buildings. Predicted wind speeds based on old Federal Building data should be multiplied by the following correction factors, CF, (the value for 'all others' is the arithmetic

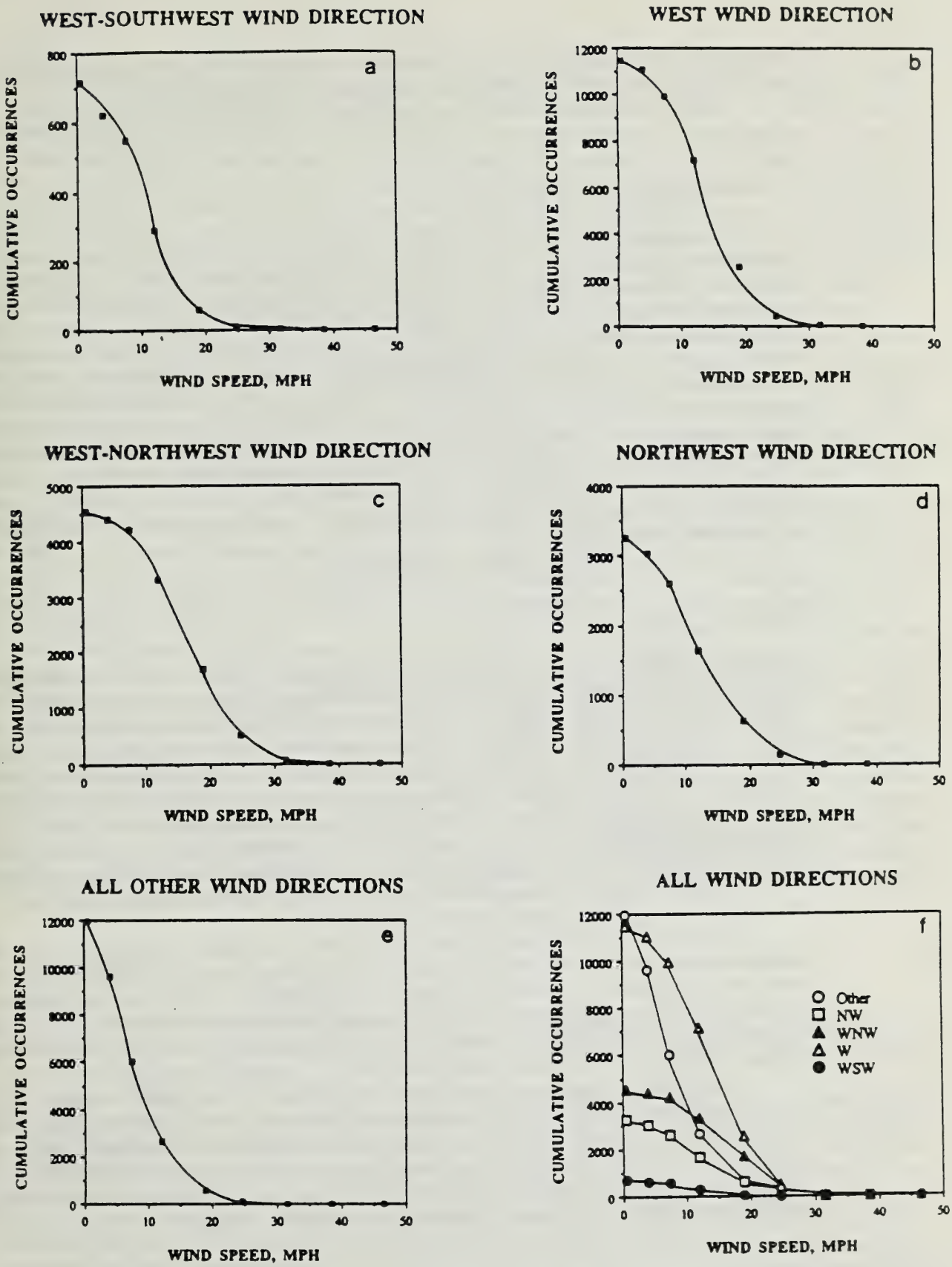


Figure 2 The cumulative number of wind occurrences from 6:00 a.m. to 8:00 p.m. as a function of hourly wind speed in mph for a) west-southwest wind, b) west wind, c) west-northwest wind, d) northwest wind, e) the 12 "untested" wind sectors, and f) total of all occurrences on the same abscissa scale for comparison purposes.

average of the first four values): northwest equals 1.02; west northwest equals 1.00; west equals 0.96; west southwest equals 0.85 and all others equal 0.96.

Therefore, the corrected full-scale pedestrian-level wind speed, $U_{ped.\ corrected_{Full\ Scale}}$, is given as,

$$U_{ped.\ corrected_{Full\ Scale}} = 2R\ CF \cdot U_{ref_{Full\ Scale}} \quad (8)$$

To determine the full-scale 10% exceeded pedestrian level wind speed, the following procedure is used. First, wind-tunnel measurements are made for the three or four wind directions (depending upon weather the site is north or south of Market Street) which produces R values for each of the measured wind directions. Equation (8) is used to scale the wind-tunnel measurements to full scale by determining (from the sextodecimo weather data) the individual full-scale 10% exceeded wind speed for each wind direction. Note, the individual full-scale wind speeds will be different since their calculations each involve wind direction measurements. This is accomplished by first selecting an initial-guess wind-speed value and then determining its per cent exceeded value. Figure 2 displays the sextodecimo Weather Bureau data for the number of occurrences as a function of directional wind speed for the northwest, west northwest, west, west southwest and "other" (i.e., untested) wind directions. Here the "other" data is a compilation of the actual untested wind directions and not an average of the tested wind directions.

From the following form of Equation (8),

$$U_{ref_{Full\ Scale}} = U_{ped_{Full\ Scale}}/(2R \cdot CF), \quad (9)$$

the full-scale speed for that wind direction may be determined from which the numerical value of associated exceeded occurrences can be determined. When all wind direction occurrences are determined, i.e., the addition of the northwest, west northwest, west, west southwest and others, a single numerical number of total occurrences for that initial guess wind speed will result. This number divided by the total of occurrences or total number of observations for all speeds will then yield the per cent exceeded value for the initial-guess wind speed. The total number of occurrences observed from the 6-year period of weather data was 32,795; thus, the procedure is repeated or iterated until the 10% exceeded number of occurrences (3280) is exactly matched. The then updated initial-value speed wind used to match the 3280 occurrences is also the full-scale 10% exceeded wind speed associated with that particular set of wind-tunnel measured R values at the single location considered.

Once the 10% exceeded wind speeds are calculated it can then be determined if the measured location met the specific criterion that applies (7-mph for public seating areas and 11-mph for a pedestrian use area). If the 10% exceeded wind speed calculation exceeds its respective criterion, the project may be modified (hopefully to improve the wind environment) and retested to determine if the modification created an improved wind condition in which the project would met the comfort criterion imposed.

This process may be repeated until the violations have been eliminated. Generally, the wind consultants and City officials determine the extent of mitigation testing required. If the City official are convinced that the only migitiation measures that would bring the project in compliance with the wind ordinance would result in an "unattractive" building, or results in other unreasonable constraints, the City official may grant an exception to the ordinance based upon Section 309 (see Appendix for precise exception wording).

5. THE HAZARD CRITERION CALCULATION

The criterion for safety or wind hazard is 26 mph (12 m/s) true hourly mean wind speed not to be reached or exceeded more than one hour per year. The frequency associated with this criterion is 0.011416% (one hour per year divided by the product of 365 times 24 hourly

observations). This safety criterion is based on the widely used limit of 44 mph (20 m/s) gust of 3 second duration described in Penwarden (1973); Hunt, et al. (1976); Jackson (1978); Melbourne (1978); and others. The difference between the 26 mph (12 m/s) of the Downtown Plan and the 44 mph (20 m/s) of the limit is due to the differences in the length of averaging periods for the two values and the two different averaging periods may be related to each other through the Beaufort Scale. The mechanical forces caused by the wind at this critical limit take effect on pedestrians on the order of three seconds, while the climatological data, against which the limits are tested, are collected over longer intervals, typically one minute (for U.S. Weather Bureau data) or one hour. When that 44 mph (20 m/s) limit is considered, it must be adjusted downward to account for the greater likelihood of stronger winds occurring during the short 3-second averaging period than during the longer averaging period of the climatological data.

The same iterative procedure is used to determine if the hazard criterion is met or exceeded. As calculated in the solution procedure, the hazard criterion is 36-mph for the one-minute averages acquired from the Weather Bureau data. This criterion corresponds to 44 mph (20 m/s) averaged over a 3 second time period through a Beaufort Scale transformation. Figure 3 displays the Beaufort Scale wind speeds as a function of average time. Superposed on the graph is the San Francisco hazard criterion curve. Statistically, the criterion corresponds to no equivalent wind speed exceeding 26 mph for a single hour of the year, or 0.011416% of time.

Of recent concern is how well does the current data base of Weather Bureau wind records reflect the actual occurrence of extreme winds? It is felt that the current methodology is assessing the hazard criterion properly; however, a key element in the practical implication of method is the validity of the data base used in the calculations. Since the technique counts extreme wind occurrences, from highest values downward, to determine exceedance of the 1-minute average 36 mph equivalent wind speed, the quality of the extreme wind data must be high if the calculation is to be valid. The fact that only a six-year wind record is used is troublesome. Obviously, a data base in excess of 10 to 20 years duration would provide a statistically superior representation. This idea is illustrated by the following consideration: often times the extreme winds are 4 to 6 orders of magnitudes less frequent than the mean or average wind speed values. Fortuitously, the limited six-year record used appears somewhat reasonable. Figure 4 displays the cumulative number of occurrences as a function of equivalent wind speed for the west northwest wind direction from the six-year data. Also displayed on the graph is the mean and standard derivation values of a 25-year wind record taken from the *Wind in California* book. Unfortunately, the data in the *Wind of California* book are not presented in a statistically form amenable to the current methodology, i.e., data is not subdivided into sextodecimo wind sectors.

6. SUMMARY

The methodology used in determining the 10% exceeded equivalent wind speeds, as required by the San Francisco pedestrian-level wind ordinance, is outlined. Also, the hazard criterion calculation is discussed.

The 10% exceeded equivalent wind speed calculations involve: first, measuring the equivalent wind speeds at a specified number of ground-level locations in an atmospheric-boundary-layer-type wind tunnel for three or four prominent wind directions depending upon the geographic location of the site; second, the wind-tunnel measurements are scaled through the power-law relationship to projected full-scale wind speeds; third, a correction factor calculation, due to full-scale building interference on the measuring anemometer, is applied to the wind-speed calculations; four, the total (all directions) 10% exceeded wind speed is determined from counting individual occurrences in the sextodecimo wind sectors for the measured wind directions. An average of the measured wind directions is used to determined the untested wind sectors. Accordingly, all wind directions are accounted for. This process involves an iterative procedure; five, once the 10% exceeded wind speed is determined an assessment of the appropriate pedestrian criterion can be made. If the ground-level location is found to exceed the criterion, the per cent of exceedance may be determined from the calculation output (as

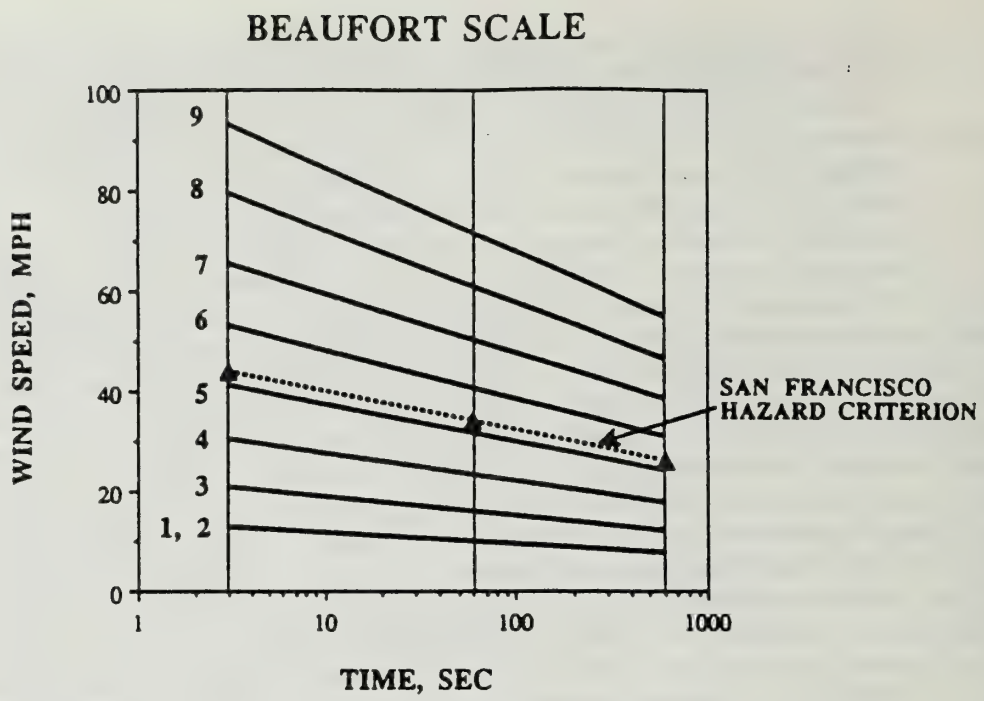


Figure 3 The Beaufort scales 1 to 9 displayed in terms of wind speed (mph) as a function of length of averaging time. Also, displayed is the San Francisco wind hazard criterion.

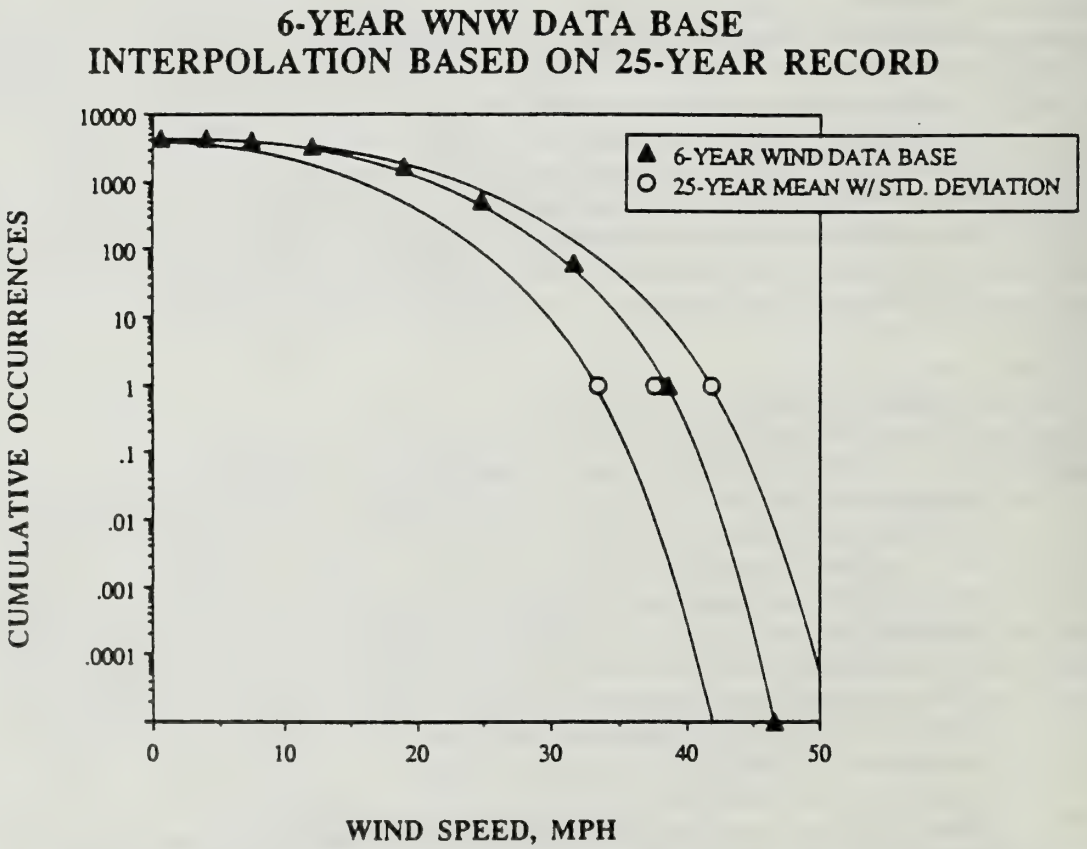


Figure 4 The cumulative number of high speed occurrences for the west northwest direction as a function of hourly wind speed in mph. Also displayed are the total mean and standard deviations wind speed values taken from the Wind in California book.

individual wind directions contributions are known). Appropriate mitigation may then be applied to the proposed building and the location retested to determine if it would met the criterion.

The calculation of the hazard criterion is similar to the 10% exceeded calculation. Some concern has been expressed over the quality of Weather Bureau data for calculation of the hazard criterion. Specifically, the short duration of data (6 year) may not provide an accurate representation of extreme wind distributions in the sextodecimo wind sectors. The calculation of the 10% exceeded equivalent wind speeds, however, is felt to be valid as data in this application do provide an adequate base.

7. ACKNOWLEDGEMENTS

The author gratefully acknowledges the discussions and technical input from J.F. Kavanagh and C.B. Bennett, both of Environmental Science Associates, Inc., San Francisco. The original conceptual development of the wind-tunnel and associated analysis is due to the efforts of C.B. Bennett and B.R. White while the compute code development is due to the efforts of C.B. Bennett and S. Guldman, formerly of Environmental Science Associates, Inc. Additionally, recent improvements to the computer code were made by J.F. Kavanagh. The author also acknowledges many helpful discussions with the original authors' of the wind ordinance: E.A. Arens, D. Ballanti, C.B. Bennett, S. Guldman and B.R. White.

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9. APPENDIX: CITY AND COUNTY OF SAN FRANCISCO MUNICIPAL CODE - SECTION 148 (WIND ORDINANCE)

REDUCTION OF GROUND-LEVEL WIND CURRENTS IN C-3 DISTRICTS. (a) **Requirement and Exception.** In C-3 Districts, buildings and additions to existing buildings shall be shaped, or other wind-baffling measures shall be adopted, so that the developments will not cause ground-level wind currents to exceed, more than 10 percent of the time year round, between 7:00 a.m. and 6:00 p.m., the comfort level of 11 m.p.h. equivalent wind speed in areas of substantial pedestrian use and seven m.p.h. equivalent wind speed in public seating areas.

When preexisting ambient wind speeds exceed the comfort level, or when a proposed building or addition may cause ambient wind speeds to exceed the comfort level, the building shall be designed to reduce the ambient wind speeds to meet the requirements. An exception may be granted, in accordance with the provisions of Section 309, allowing the building or addition to add to the amount of time that the comfort level is exceeded by the least practical amount if (1) it can be shown that a building or addition cannot be shaped and other wind-baffling measures cannot be adopted to meet the foregoing requirements without creating an unattractive and ungainly building form and without unduly restricting the development potential of the building site in question, and (2) it is concluded that, because of the limited amount by which the comfort level is exceeded, the limited location in which the comfort level is exceeded, or the limited time during which the comfort level is exceeded, the addition is insubstantial.

No exception shall be granted and no building or addition shall be permitted that causes equivalent wind speeds to reach or exceed the hazard level of 26 miles per hour for a single hour of the year.

(b) **Definition.** The term "equivalent wind speed" shall mean an hourly mean wind speed adjusted to incorporate the effects of gustiness or turbulence on pedestrians.

(c) **Guidelines.** Procedures and Methodologies for implementing this section shall be specified by the Office of Environmental Review of the Department of City Planning. Ordinance 414-85, Approved September 17, 1985.

APPENDIX C: COMPUTER OUTPUT

WIND-TUNNEL TEST RESULTS

11-MPH COMFORT CRITERION: TENTH & MARKET SITE EXISTING SETTING

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Existing TEST DATE: 4/26/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 10.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	1.2356	1.3040	1.0772	0.8706	1.1218	
	23.8			CONTRIB	19.33%	55.25%	20.98%	0.29%	4.15%	3,280
		11.0	50	CONTRIB	13.50%	23.83%	47.03%	4.69%	10.94%	16,643
2				RATIOS	0.6960	0.5894	0.8884	1.2658	0.8599	
	16.7			CONTRIB	5.65%	4.90%	62.36%	20.33%	6.75%	3,279
		11.0	36	CONTRIB	8.15%	14.78%	52.10%	17.09%	7.89%	11,849
3				RATIOS	0.4310	0.4268	0.9110	1.0804	0.7123	
	16.0			CONTRIB	0.00%	0.05%	83.74%	13.26%	2.95%	3,280
		11.0	28	CONTRIB	1.32%	3.93%	70.87%	18.17%	5.70%	9,229
4				RATIOS	0.7068	0.6474	0.7984	0.6972	0.7124	
	15.0			CONTRIB	11.23%	21.02%	62.08%	1.40%	4.26%	3,280
		11.0	26	CONTRIB	11.46%	23.06%	55.43%	4.00%	6.05%	8,710
5				RATIOS	0.9446	0.5670	0.6450	0.6318	0.6971	
	13.3			CONTRIB	37.67%	20.00%	33.23%	1.63%	7.47%	3,279
		11.0	21	CONTRIB	25.08%	22.33%	42.69%	2.78%	7.12%	6,924
6				RATIOS	0.5214	0.7474	0.9690	0.9746	0.8031	
	17.8			CONTRIB	0.01%	18.79%	73.68%	4.27%	3.24%	3,280
		11.0	36	CONTRIB	3.18%	20.50%	60.30%	9.74%	6.28%	12,084
7				RATIOS	0.6604	0.5938	0.8772	0.8630	0.7486	
	15.9			CONTRIB	5.55%	7.99%	78.35%	4.00%	4.10%	3,280
		11.0	30	CONTRIB	8.63%	17.70%	59.97%	7.57%	6.13%	9,998
8				RATIOS	1.1718	1.5894	0.9370	0.8376	1.1339	
	23.8			CONTRIB	14.69%	73.86%	6.82%	0.21%	4.43%	3,280
		11.0	48	CONTRIB	13.43%	26.67%	43.90%	4.27%	11.73%	15,896
9				RATIOS	0.5350	1.4196	0.9464	0.8636	0.9411	
	20.9			CONTRIB	0.00%	75.40%	20.76%	0.66%	3.18%	3,280
		11.0	41	CONTRIB	3.24%	30.19%	52.06%	5.53%	8.98%	13,716
10				RATIOS	1.2520	1.0988	0.5646	0.7526	0.9170	
	18.7			CONTRIB	33.22%	61.08%	0.00%	0.56%	5.14%	3,280
		11.0	27	CONTRIB	24.95%	39.89%	17.63%	5.05%	12.48%	9,117
11				RATIOS	1.1254	1.0056	0.5448	0.7196	0.8488	
	17.1			CONTRIB	32.18%	61.36%	0.11%	0.76%	5.58%	3,280
		11.0	24	CONTRIB	25.41%	43.03%	15.59%	4.84%	11.12%	8,082
12				RATIOS	0.8978	0.8586	0.5554	0.5462	0.7145	
	14.5			CONTRIB	27.93%	61.51%	5.00%	0.36%	5.20%	3,280
		11.0	20	CONTRIB	24.59%	45.09%	21.36%	1.07%	7.90%	6,728
13				RATIOS	0.7102	1.2240	0.4750	0.4746	0.7209	
	16.1			CONTRIB	7.82%	89.07%	0.00%	0.01%	3.10%	3,280
		11.0	18	CONTRIB	17.03%	64.89%	8.37%	0.48%	9.22%	5,920
14				RATIOS	0.4310	0.8732	0.9284	0.4290	0.6654	
	17.6			CONTRIB	0.00%	39.92%	59.53%	0.00%	0.55%	3,280
		11.0	32	CONTRIB	1.16%	29.60%	65.03%	0.14%	4.07%	10,505

ca-ion	10.0% Ground Speed	Exc. Speed Exc.	%	---Criterion--- Time Exc.		NW	WNW	W	WSW	OTHER	SUM
5					RATIOS	0.5260	0.8744	0.4102	0.7612	0.6429	
	12.5				CONTRIB	5.85%	78.40%	0.69%	8.48%	6.59%	3,279
		11.0	13		CONTRIB	8.95%	69.00%	2.90%	10.63%	8.53%	4,515
6					RATIOS	0.7508	0.5128	0.3284	0.8902	0.6205	
	11.0				CONTRIB	34.41%	29.59%	0.00%	25.55%	10.45%	3,279
		11.0	10		CONTRIB	34.30%	29.69%	0.00%	25.58%	10.44%	3,311
7					RATIOS	0.9430	0.3374	0.3256	0.9266	0.6331	
	10.8				CONTRIB	54.02%	1.62%	0.00%	32.38%	11.99%	3,279
		11.0	9		CONTRIB	55.68%	1.07%	0.00%	31.45%	11.80%	3,114
8					RATIOS	0.5694	0.8688	0.3978	0.7294	0.6413	
	12.5				CONTRIB	9.21%	77.78%	0.07%	6.40%	6.53%	3,279
		11.0	14		CONTRIB	13.65%	67.02%	2.12%	8.92%	8.30%	4,606
9					RATIOS	0.4282	1.0654	0.6152	0.6768	0.6964	
	14.7				CONTRIB	0.00%	82.75%	11.75%	1.31%	4.19%	3,280
		11.0	21		CONTRIB	1.58%	50.14%	37.12%	4.28%	6.88%	7,142
0					RATIOS	0.6164	0.8760	1.2546	0.9232	0.9175	
	22.1				CONTRIB	0.00%	13.47%	83.96%	0.72%	1.85%	3,280
		11.0	44		CONTRIB	5.08%	21.32%	59.22%	6.60%	7.78%	14,653
1					RATIOS	0.5260	0.8592	0.9122	0.8382	0.7839	
	17.4				CONTRIB	0.04%	38.71%	56.28%	1.78%	3.18%	3,279
		11.0	34		CONTRIB	3.55%	26.67%	57.61%	5.98%	6.19%	11,387
2					RATIOS	0.2514	0.4022	0.4028	0.5398	0.3990	
	8.1				CONTRIB	0.26%	40.64%	40.71%	12.97%	5.42%	3,279
		11.0	1		CONTRIB	0.00%	53.90%	27.12%	16.41%	2.58%	405
3					RATIOS	0.7124	0.8006	0.4896	1.1018	0.7761	
	14.5				CONTRIB	14.18%	55.60%	1.51%	20.38%	8.31%	3,280
		11.0	20		CONTRIB	15.01%	40.50%	9.00%	25.38%	10.11%	6,763
4					RATIOS	0.5514	0.7816	0.6292	0.8018	0.6910	
	13.7				CONTRIB	4.73%	58.80%	23.52%	6.80%	6.14%	3,279
		11.0	21		CONTRIB	7.51%	37.66%	39.75%	8.25%	6.83%	7,023
5					RATIOS	0.5084	1.0720	0.6846	0.5612	0.7065	
	15.5				CONTRIB	0.49%	77.82%	17.95%	0.27%	3.47%	3,280
		11.0	24		CONTRIB	4.21%	45.38%	42.83%	1.09%	6.49%	7,915
6					RATIOS	0.6842	1.3660	1.5268	1.0976	1.1686	
	28.6				CONTRIB	0.00%	33.59%	64.49%	0.41%	1.50%	3,280
		11.0	56		CONTRIB	5.00%	21.83%	53.27%	9.19%	10.71%	18,603
7					RATIOS	0.5406	0.9770	0.8630	0.9624	0.8357	
	17.6				CONTRIB	0.11%	56.06%	35.43%	4.15%	4.25%	3,280
		11.0	35		CONTRIB	4.05%	29.41%	49.55%	9.64%	7.35%	11,655
8					RATIOS	0.6242	0.7190	0.5408	0.4816	0.5914	
	12.3				CONTRIB	17.23%	60.63%	17.07%	0.47%	4.61%	3,279
		11.0	14		CONTRIB	16.56%	50.68%	25.95%	0.68%	6.12%	4,619
9					RATIOS	0.6046	0.4738	0.6260	0.7306	0.6087	
	12.0				CONTRIB	16.69%	13.01%	55.26%	8.77%	6.28%	3,280
		11.0	14		CONTRIB	14.58%	14.04%	56.30%	8.43%	6.65%	4,901
0					RATIOS	0.8848	1.3296	0.7398	0.4988	0.8632	
	18.9				CONTRIB	10.88%	79.39%	6.29%	0.00%	3.44%	3,280
		11.0	32		CONTRIB	15.14%	37.59%	38.02%	0.37%	8.88%	10,657

Location	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
31				RATIOS	1.2536	1.1256	0.5488	0.5688	0.8742	
	18.8			CONTRIB	33.10%	62.99%	0.00%	0.04%	3.87%	3,280
		11.0	25	CONTRIB	27.24%	44.03%	15.84%	1.13%	11.76%	8,362
32				RATIOS	0.3892	0.4446	0.3920	0.8220	0.5119	
	9.2			CONTRIB	5.98%	34.45%	13.32%	36.30%	9.95%	3,279
		11.0	4	CONTRIB	2.66%	36.87%	6.07%	45.39%	9.01%	1,397
33				RATIOS	0.4616	1.3028	0.8700	0.5324	0.7917	
	19.1			CONTRIB	0.00%	76.17%	22.01%	0.00%	1.82%	3,280
		11.0	33	CONTRIB	1.78%	36.62%	54.33%	0.56%	6.71%	10,828

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Alt2 TEST DATE: 4/26/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 10.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Loca-tion	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	1.3382	1.8036	0.9720	0.7378	1.2129	
	26.4			CONTRIB	17.00%	75.98%	3.48%	0.00%	3.54%	3,280
		11.0	50	CONTRIB	14.62%	25.77%	44.01%	2.58%	13.02%	16,591
2				RATIOS	0.8242	0.7236	0.9532	1.1886	0.9224	
	18.1			CONTRIB	9.30%	14.21%	58.07%	12.06%	6.36%	3,279
		11.0	42	CONTRIB	9.91%	16.89%	51.50%	13.43%	8.28%	13,992
3				RATIOS	0.4232	0.4000	0.7662	1.0536	0.6607	
	14.0			CONTRIB	0.04%	0.23%	75.76%	19.83%	4.15%	3,279
		11.0	20	CONTRIB	1.48%	3.12%	65.76%	23.38%	6.27%	6,679
4				RATIOS	0.7174	0.7512	0.7182	0.6434	0.7075	
	14.7			CONTRIB	13.85%	45.43%	35.11%	0.96%	4.65%	3,279
		11.0	24	CONTRIB	12.81%	31.03%	47.05%	2.70%	6.41%	8,044
5				RATIOS	0.8320	0.5158	0.5588	0.7516	0.6645	
	12.1			CONTRIB	35.43%	20.33%	24.42%	10.01%	9.81%	3,279
		11.0	14	CONTRIB	29.43%	21.00%	31.17%	9.53%	8.86%	4,806
6				RATIOS	0.6920	0.6364	0.6514	0.6660	0.6614	
	13.2			CONTRIB	19.66%	34.78%	37.33%	2.43%	5.79%	3,280
		11.0	20	CONTRIB	14.39%	29.54%	45.60%	4.14%	6.33%	6,630
7				RATIOS	0.8104	0.6618	0.7538	0.6394	0.7163	
	14.8			CONTRIB	21.74%	25.15%	47.36%	0.90%	4.86%	3,279
		11.0	25	CONTRIB	15.95%	24.73%	50.45%	2.48%	6.39%	8,385
8				RATIOS	1.5312	1.5112	1.0892	0.8222	1.2384	
	26.2			CONTRIB	24.88%	59.51%	11.33%	0.08%	4.20%	3,280
		11.0	53	CONTRIB	14.98%	23.93%	44.68%	3.60%	12.81%	17,651
9				RATIOS	0.9450	1.4688	0.8742	0.9242	1.0530	
	21.4			CONTRIB	7.83%	76.59%	9.47%	0.88%	5.23%	3,280
		11.0	44	CONTRIB	12.02%	29.14%	41.15%	6.71%	10.97%	14,455
10				RATIOS	1.3290	1.2848	0.3748	0.4040	0.8481	
	20.5			CONTRIB	31.06%	67.19%	0.00%	0.00%	1.75%	3,280
		11.0	22	CONTRIB	32.96%	53.88%	0.76%	0.13%	12.27%	7,308
11				RATIOS	1.0870	0.9912	0.3646	0.6148	0.7644	
	16.4			CONTRIB	32.37%	63.46%	0.00%	0.35%	3.82%	3,280
		11.0	19	CONTRIB	31.57%	54.85%	0.67%	2.54%	10.37%	6,295
12				RATIOS	1.0286	0.9718	0.5782	0.4940	0.7681	
	16.2			CONTRIB	29.79%	63.15%	2.68%	0.06%	4.31%	3,280
		11.0	24	CONTRIB	23.88%	43.31%	23.95%	0.47%	8.40%	7,892
13				RATIOS	1.0192	1.1912	0.5942	0.4456	0.8125	
	18.0			CONTRIB	23.12%	72.46%	1.22%	0.00%	3.20%	3,280
		11.0	26	CONTRIB	21.38%	43.36%	26.04%	0.22%	9.00%	8,739
14				RATIOS	0.8584	0.9064	0.5200	0.4570	0.6854	
	14.5			CONTRIB	25.69%	67.15%	2.82%	0.08%	4.26%	3,280
		11.0	18	CONTRIB	24.37%	52.93%	14.79%	0.36%	7.55%	6,204

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Alt2 TEST DATE: 4/26/94

Location	10.0% Ground Speed	Exc. Speed	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
15				RATIOS	0.6242	0.7288	0.5388	0.6542	0.6365	
	12.5			CONTRIB	15.59%	60.26%	14.76%	3.09%	6.30%	3,279
		11.0	15	CONTRIB	15.49%	48.35%	23.67%	4.92%	7.56%	4,938
16				RATIOS	0.2914	0.3800	0.4320	0.9026	0.5015	
	9.3			CONTRIB	0.27%	16.48%	24.71%	49.80%	8.73%	3,280
		11.0	4	CONTRIB	0.00%	9.94%	15.86%	65.90%	8.30%	1,351
17				RATIOS	0.3080	0.4236	0.3960	0.9436	0.5178	
	9.4			CONTRIB	0.44%	25.30%	12.33%	52.25%	9.68%	3,280
		11.0	4	CONTRIB	0.00%	21.09%	5.79%	64.81%	8.31%	1,614
18				RATIOS	0.5444	0.7018	0.5612	0.5646	0.5930	
	12.1			CONTRIB	8.75%	59.99%	24.66%	1.46%	5.14%	3,279
		11.0	14	CONTRIB	10.51%	48.39%	33.03%	1.93%	6.15%	4,670
19				RATIOS	0.7670	0.7630	0.5086	0.5754	0.6535	
	13.0			CONTRIB	25.44%	61.14%	6.40%	1.04%	5.97%	3,279
		11.0	15	CONTRIB	23.59%	50.68%	15.67%	2.03%	8.03%	5,038
20				RATIOS	0.5554	0.8400	1.1612	0.9778	0.8836	
	20.8			CONTRIB	0.00%	15.63%	80.54%	1.53%	2.30%	3,280
		11.0	42	CONTRIB	3.94%	21.09%	59.12%	8.55%	7.29%	13,929
21				RATIOS	0.8078	1.0094	0.9606	0.7646	0.8856	
	19.3			CONTRIB	5.80%	50.37%	39.77%	0.50%	3.55%	3,280
		11.0	41	CONTRIB	9.79%	25.68%	53.39%	3.59%	7.54%	13,566
22				RATIOS	0.2440	0.2558	0.3708	0.8324	0.4257	
	7.7			CONTRIB	0.29%	2.77%	30.36%	56.86%	9.71%	3,280
		11.0	2	CONTRIB	0.00%	0.00%	6.76%	89.97%	3.27%	738
23				RATIOS	0.6920	1.0064	0.5932	1.0952	0.8467	
	16.0			CONTRIB	6.95%	67.41%	3.75%	14.03%	7.86%	3,280
		11.0	28	CONTRIB	10.28%	37.49%	24.25%	18.37%	9.61%	9,279
24				RATIOS	0.5240	0.8564	0.9702	0.8052	0.7889	
	18.1			CONTRIB	0.00%	31.67%	64.66%	1.05%	2.62%	3,279
		11.0	36	CONTRIB	3.29%	25.15%	60.68%	4.90%	5.98%	12,018
25				RATIOS	0.7780	1.1294	0.9800	0.4666	0.8385	
	19.9			CONTRIB	3.53%	57.89%	36.44%	0.00%	2.14%	3,280
		11.0	40	CONTRIB	9.32%	28.05%	55.85%	0.20%	6.59%	13,147
26				RATIOS	0.5950	1.3906	1.3686	1.0878	1.1105	
	26.7			CONTRIB	0.00%	49.24%	48.31%	0.60%	1.84%	3,280
		11.0	53	CONTRIB	3.95%	23.46%	52.70%	9.68%	10.20%	17,464
27				RATIOS	0.5400	0.9342	1.0080	1.0700	0.8880	
	19.3			CONTRIB	0.00%	35.81%	55.87%	4.68%	3.64%	3,279
		11.0	42	CONTRIB	3.35%	23.96%	53.51%	11.81%	7.38%	13,985
28				RATIOS	0.9058	0.8152	0.8052	0.4096	0.7339	
	16.4			CONTRIB	21.89%	39.54%	35.54%	0.00%	3.03%	3,280
		11.0	30	CONTRIB	16.70%	28.15%	49.27%	0.11%	5.77%	9,992
29				RATIOS	0.8458	0.5918	0.4240	0.6724	0.6335	
	11.7			CONTRIB	39.08%	43.13%	3.01%	5.85%	8.93%	3,279
		11.0	12	CONTRIB	36.03%	43.31%	4.41%	7.20%	9.05%	4,066
30				RATIOS	1.2782	1.3848	0.8680	0.5636	1.0236	
	22.3			CONTRIB	23.92%	66.39%	6.10%	0.00%	3.59%	3,280
		11.0	42	CONTRIB	16.77%	29.54%	42.28%	0.64%	10.77%	13,842

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Alt2 TEST DATE: 4/26/94

Loca-tion	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
31				RATIOS	1.3008	0.9964	0.5148	0.5448	0.8392	
	17.9			CONTRIB	39.55%	56.41%	0.00%	0.05%	3.99%	3,280
		11.0	23	CONTRIB	30.98%	45.44%	11.25%	0.93%	11.40%	7,617
32				RATIOS	0.1972	0.3806	0.3914	0.9082	0.4693	
	8.9			CONTRIB	0.00%	20.69%	17.60%	53.78%	7.92%	3,279
		11.0	3	CONTRIB	0.00%	11.28%	6.92%	75.40%	6.40%	1,208
33				RATIOS	0.4534	1.4470	0.4298	0.4222	0.6881	
	17.7			CONTRIB	0.00%	99.21%	0.00%	0.00%	0.79%	3,280
		11.0	15	CONTRIB	3.45%	82.85%	4.05%	0.27%	9.39%	5,047

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Project1 TEST DATE: 4/26/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 10.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	1.1922	1.5884	1.0582	0.7422	1.1452	
	24.8			CONTRIB	12.79%	69.42%	14.06%	0.02%	3.70%	3,280
		11.0	50	CONTRIB	13.17%	25.71%	46.91%	2.65%	11.56%	16,487
2				RATIOS	0.7600	0.6250	1.0474	1.2498	0.9205	
	19.1			CONTRIB	4.34%	2.56%	76.54%	11.91%	4.65%	3,280
		11.0	42	CONTRIB	8.39%	13.72%	55.26%	14.35%	8.28%	13,899
3				RATIOS	0.3938	0.3512	0.8548	1.1040	0.6759	
	15.3			CONTRIB	0.00%	0.00%	80.26%	16.90%	2.83%	3,280
		11.0	24	CONTRIB	0.54%	0.86%	71.24%	21.70%	5.66%	7,930
4				RATIOS	0.5988	0.6800	0.7742	0.6746	0.6819	
	14.6			CONTRIB	5.10%	29.52%	60.17%	1.34%	3.86%	3,280
		11.0	24	CONTRIB	8.62%	26.59%	55.43%	3.69%	5.68%	8,116
5				RATIOS	0.8928	0.4838	0.5938	0.7150	0.6713	
	12.3			CONTRIB	39.50%	12.45%	32.30%	6.36%	9.39%	3,280
		11.0	16	CONTRIB	29.97%	13.78%	41.28%	6.97%	8.01%	5,488
6				RATIOS	0.5356	0.6422	0.7560	0.7196	0.6633	
	14.1			CONTRIB	2.49%	26.56%	64.38%	2.58%	4.00%	3,279
		11.0	22	CONTRIB	5.96%	26.44%	56.74%	5.21%	5.64%	7,506
7				RATIOS	0.6600	0.5762	0.7862	0.6526	0.6687	
	14.5			CONTRIB	9.40%	13.77%	71.98%	1.16%	3.68%	3,279
		11.0	23	CONTRIB	10.97%	21.16%	59.30%	3.04%	5.52%	7,859
8				RATIOS	1.2428	1.5494	0.9658	0.7346	1.1231	
	24.1			CONTRIB	18.74%	69.54%	7.83%	0.05%	3.84%	3,280
		11.0	48	CONTRIB	14.11%	26.43%	45.41%	2.63%	11.41%	16,009
9				RATIOS	0.6678	1.4194	0.9188	0.8440	0.9625	
	20.7			CONTRIB	0.39%	76.72%	18.42%	0.61%	3.85%	3,280
		11.0	41	CONTRIB	6.45%	30.23%	48.70%	5.10%	9.51%	13,695
10				RATIOS	1.2378	0.9466	0.3794	0.2560	0.7049	
	16.8			CONTRIB	40.64%	57.32%	0.00%	0.00%	2.04%	3,280
		11.0	18	CONTRIB	36.32%	54.44%	1.00%	0.00%	8.23%	6,195
11				RATIOS	1.0606	0.9328	0.3508	0.3342	0.6696	
	15.5			CONTRIB	34.56%	62.95%	0.00%	0.00%	2.48%	3,280
		11.0	17	CONTRIB	33.87%	58.44%	0.06%	0.03%	7.61%	5,729
12				RATIOS	0.9228	0.8156	0.4178	0.2826	0.6097	
	13.6			CONTRIB	34.09%	62.82%	0.00%	0.00%	3.09%	3,279
		11.0	15	CONTRIB	33.99%	56.33%	3.12%	0.00%	6.55%	4,996
13				RATIOS	0.9300	1.1600	0.3582	0.4618	0.7275	
	17.0			CONTRIB	21.58%	76.02%	0.00%	0.00%	2.40%	3,280
		11.0	18	CONTRIB	28.27%	61.78%	0.27%	0.40%	9.28%	6,052
14				RATIOS	0.8450	0.9538	0.4012	0.2456	0.6114	
	14.4			CONTRIB	25.02%	72.70%	0.00%	0.00%	2.28%	3,280
		11.0	16	CONTRIB	27.67%	64.08%	2.00%	0.00%	6.25%	5,284

ca-ion	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
5				RATIOS	0.6678	0.8778	0.3234	0.8208	0.6724	
	13.5			CONTRIB	14.92%	70.85%	0.00%	8.61%	5.62%	3,279
		11.0	15	CONTRIB	17.37%	61.57%	0.00%	12.39%	8.68%	5,090
6				RATIOS	0.2244	0.3294	0.4102	0.9248	0.4722	
	8.7			CONTRIB	0.00%	8.63%	26.64%	55.87%	8.86%	3,280
		11.0	3	CONTRIB	0.00%	1.67%	10.87%	80.82%	6.65%	1,203
7				RATIOS	0.4978	0.3884	0.4520	0.9000	0.5595	
	9.9			CONTRIB	16.26%	12.05%	21.91%	39.22%	10.56%	3,279
		11.0	5	CONTRIB	15.76%	8.63%	17.59%	46.96%	11.05%	1,876
8				RATIOS	0.6284	0.8100	0.4212	0.7612	0.6552	
	12.7			CONTRIB	15.01%	68.95%	1.31%	7.85%	6.87%	3,279
		11.0	14	CONTRIB	16.80%	60.33%	3.64%	10.39%	8.83%	4,618
9				RATIOS	0.6438	0.9344	0.3812	0.7722	0.6829	
	13.6			CONTRIB	11.71%	76.91%	0.00%	5.47%	5.92%	3,279
		11.0	15	CONTRIB	15.71%	64.42%	1.25%	9.72%	8.90%	5,201
-				RATIOS	0.5500	0.7766	1.2538	0.9394	0.8799	
	21.3			CONTRIB	0.00%	6.47%	90.83%	1.00%	1.69%	3,280
		11.0	42	CONTRIB	3.75%	18.92%	62.64%	7.43%	7.25%	13,846
1				RATIOS	0.7912	0.9256	0.9068	0.8994	0.8807	
	18.2			CONTRIB	7.29%	44.92%	40.77%	2.16%	4.85%	3,279
		11.0	39	CONTRIB	9.80%	25.73%	49.93%	6.78%	7.76%	12,961
2				RATIOS	0.2216	0.3578	0.2640	0.4554	0.3247	
	6.2			CONTRIB	1.27%	59.46%	13.70%	18.14%	7.43%	3,280
		11.0	0	CONTRIB	0.00%	78.51%	0.00%	21.49%	0.00%	102
3				RATIOS	0.6988	0.9062	0.5092	1.1168	0.8077	
	15.2			CONTRIB	9.87%	62.41%	1.44%	18.19%	8.09%	3,280
		11.0	23	CONTRIB	12.87%	43.37%	10.51%	23.05%	10.21%	7,569
4				RATIOS	0.5534	0.8600	0.8148	0.8018	0.7575	
	16.3			CONTRIB	0.71%	52.25%	41.14%	2.07%	3.82%	3,280
		11.0	30	CONTRIB	5.46%	30.86%	51.35%	5.88%	6.44%	9,854
5				RATIOS	0.5522	1.1016	0.7828	0.4902	0.7317	
	16.8			CONTRIB	0.48%	71.64%	25.25%	0.00%	2.64%	3,280
		11.0	28	CONTRIB	5.66%	38.77%	49.11%	0.38%	6.08%	9,395
6				RATIOS	0.6800	1.3028	1.4818	1.1012	1.1414	
	27.6			CONTRIB	0.00%	31.58%	66.18%	0.52%	1.71%	3,280
		11.0	55	CONTRIB	5.05%	21.78%	53.35%	9.42%	10.39%	18,202
7				RATIOS	0.5238	0.7912	0.9612	0.9930	0.8173	
	17.8			CONTRIB	0.01%	23.87%	67.90%	4.72%	3.50%	3,280
		11.0	37	CONTRIB	3.18%	21.72%	58.47%	10.16%	6.46%	12,393
8				RATIOS	0.6428	0.7372	0.5794	0.4312	0.5976	
	12.8			CONTRIB	16.13%	59.22%	20.64%	0.14%	3.88%	3,279
		11.0	16	CONTRIB	14.88%	44.35%	35.01%	0.28%	5.48%	5,475
9				RATIOS	0.6706	0.4694	0.5028	0.7284	0.5928	
	10.8			CONTRIB	28.52%	22.24%	25.91%	13.52%	9.81%	3,280
		11.0	9	CONTRIB	29.96%	22.16%	24.52%	13.73%	9.63%	2,977
0				RATIOS	1.1594	1.3506	0.5560	0.5208	0.8967	
	20.3			CONTRIB	23.72%	73.39%	0.00%	0.00%	2.89%	3,280
		11.0	26	CONTRIB	24.25%	46.34%	16.61%	0.60%	12.19%	8,714

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Project1 TEST DATE: 4/26/94

Location	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
31				RATIOS	1.2072	0.9344	0.5280	0.6144	0.8210	
	16.8			CONTRIB	38.48%	56.21%	0.03%	0.28%	4.99%	3,280
		11.0	22	CONTRIB	29.15%	44.46%	13.51%	2.11%	10.77%	7,537
32				RATIOS	0.2772	0.2850	0.4274	0.8774	0.4667	
	8.7			CONTRIB	0.33%	2.57%	35.98%	52.67%	8.45%	3,280
		11.0	3	CONTRIB	0.00%	0.08%	18.04%	74.89%	6.99%	1,073
33				RATIOS	0.4422	1.3206	0.7286	0.3884	0.7199	
	17.6			CONTRIB	0.00%	87.51%	10.96%	0.00%	1.53%	3,280
		11.0	26	CONTRIB	1.76%	46.39%	45.46%	0.08%	6.32%	8,606

WIND-TUNNEL TEST RESULTS

11-MPH COMFORT CRITERION: TENTH & MARKET SITE OPTION C SETTING

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Option C TEST DATE: 7/20/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 10.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
			RATIOS	1.0498	1.3520	1.0034	0.6952	1.0251	
22.2			CONTRIB	11.50%	64.28%	20.49%	0.08%	3.65%	3,280
	11.0	46	CONTRIB	12.59%	26.47%	48.88%	2.26%	9.80%	15,262
			RATIOS	0.6630	0.5412	0.9930	1.0160	0.8033	
17.3			CONTRIB	2.79%	1.46%	85.32%	6.70%	3.74%	3,280
	11.0	35	CONTRIB	7.46%	10.75%	63.54%	11.74%	6.51%	11,660
			RATIOS	0.3666	0.5094	0.7816	0.8848	0.6356	
14.0			CONTRIB	0.00%	6.25%	80.03%	10.43%	3.29%	3,280
	11.0	20	CONTRIB	0.27%	14.09%	67.91%	12.23%	5.49%	6,771
			RATIOS	0.5480	0.7034	0.7456	0.4522	0.6123	
14.3			CONTRIB	2.98%	38.74%	55.75%	0.08%	2.45%	3,279
	11.0	22	CONTRIB	7.02%	31.25%	56.87%	0.29%	4.57%	7,254
			RATIOS	1.0684	0.5090	0.5982	0.6264	0.7005	
12.9			CONTRIB	51.22%	12.92%	24.76%	1.90%	9.19%	3,279
	11.0	18	CONTRIB	32.74%	15.93%	39.91%	3.04%	8.38%	5,969
			RATIOS	0.4548	0.6494	0.8636	0.6710	0.6597	
15.6			CONTRIB	0.00%	17.98%	78.92%	0.86%	2.24%	3,280
	11.0	26	CONTRIB	2.04%	23.23%	66.61%	3.32%	4.80%	8,684
			RATIOS	0.8992	0.8556	0.9768	0.8298	0.8903	
18.7			CONTRIB	12.61%	27.36%	54.67%	1.04%	4.33%	3,280
	11.0	41	CONTRIB	12.10%	22.04%	53.49%	4.79%	7.59%	13,697
			RATIOS	1.2050	1.4962	0.9664	0.7714	1.1097	
23.6			CONTRIB	17.84%	68.25%	9.73%	0.11%	4.07%	3,280
	11.0	48	CONTRIB	13.73%	26.44%	45.54%	3.15%	11.14%	15,970
			RATIOS	0.5020	1.0670	0.7550	0.8230	0.7867	
16.5			CONTRIB	0.08%	70.47%	22.72%	2.29%	4.45%	3,280
	11.0	28	CONTRIB	3.27%	37.76%	44.74%	6.71%	7.51%	9,489
			RATIOS	0.8942	1.1340	0.5624	0.4510	0.7604	
16.8			CONTRIB	20.37%	74.89%	1.43%	0.00%	3.30%	3,280
	11.0	23	CONTRIB	21.76%	48.81%	20.67%	0.27%	8.49%	7,572
			RATIOS	0.8116	1.0670	0.5976	0.4132	0.7223	
15.9			CONTRIB	17.95%	74.32%	4.35%	0.00%	3.38%	3,280
	11.0	23	CONTRIB	17.08%	45.64%	30.13%	0.15%	7.00%	7,852
			RATIOS	0.6598	0.7558	0.4988	0.3530	0.5668	
12.2			CONTRIB	20.97%	65.83%	9.43%	0.00%	3.76%	3,279
	11.0	13	CONTRIB	20.05%	58.60%	16.09%	0.07%	5.19%	4,297
			RATIOS	1.1020	1.0650	0.7606	0.3134	0.8102	
18.4			CONTRIB	26.31%	59.95%	10.89%	0.00%	2.85%	3,280
	11.0	32	CONTRIB	18.83%	33.49%	40.39%	0.00%	7.29%	10,692
			RATIOS	0.6192	0.5808	0.5214	0.2596	0.4952	
11.2			CONTRIB	22.21%	49.12%	25.74%	0.00%	2.93%	3,280
	11.0	10	CONTRIB	21.45%	48.89%	26.67%	0.00%	2.98%	3,505

WIND-TUNNEL TEST RESULTS

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Option C TEST DATE: 7/20/94

11-MPH COMFORT CRITERION: TENTH & MARKET SITE OPTION C SETTING

Location	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
15				RATIOS	0.5430	0.6520	0.4624	0.4780	0.5338	
	10.8			CONTRIB	16.19%	63.39%	14.08%	1.02%	5.33%	3,279
		11.0	9	CONTRIB	15.54%	65.20%	13.18%	0.97%	5.12%	3,112
16				RATIOS	0.1610	0.2694	0.3648	0.7508	0.3865	
	7.5			CONTRIB	0.00%	5.87%	34.70%	52.50%	6.92%	3,279
		11.0	1	CONTRIB	0.00%	0.01%	8.44%	90.19%	1.37%	506
17				RATIOS	0.3392	0.7678	0.4948	0.6578	0.5649	
	11.5			CONTRIB	0.01%	73.91%	15.00%	5.80%	5.27%	3,279
		11.0	11	CONTRIB	0.15%	69.50%	17.65%	6.81%	5.90%	3,708
18				RATIOS	0.5090	0.4670	0.4832	0.6316	0.5227	
	10.0			CONTRIB	17.89%	30.69%	33.27%	10.64%	7.51%	3,280
		11.0	5	CONTRIB	17.94%	34.47%	29.77%	10.26%	7.56%	1,870
19				RATIOS	0.5972	0.7854	0.6232	0.4362	0.6105	
	13.3			CONTRIB	8.60%	61.49%	26.25%	0.11%	3.54%	3,279
		11.0	19	CONTRIB	10.81%	41.38%	42.43%	0.26%	5.11%	6,436
20				RATIOS	0.6006	0.7132	1.1826	0.8310	0.8318	
	20.0			CONTRIB	0.03%	5.40%	92.00%	0.69%	1.87%	3,280
		11.0	39	CONTRIB	5.48%	17.99%	64.83%	5.13%	6.57%	12,860
21				RATIOS	0.7168	0.8378	0.9150	0.6058	0.7688	
	17.4			CONTRIB	5.26%	34.46%	57.25%	0.19%	2.85%	3,279
		11.0	34	CONTRIB	9.04%	25.74%	58.10%	1.27%	5.84%	11,371
22				RATIOS	0.2350	0.3178	0.3514	0.2762	0.2951	
	12.5			CONTRIB	0.00%	99.93%	0.07%	0.00%	0.00%	0
		11.0	0	CONTRIB	0.00%	71.43%	28.57%	0.00%	0.00%	13
23				RATIOS	0.7748	0.8338	0.4688	1.0086	0.7715	
	14.7			CONTRIB	19.96%	58.11%	0.11%	14.24%	7.58%	3,280
		11.0	20	CONTRIB	18.46%	44.18%	6.89%	20.26%	10.21%	6,578
24				RATIOS	0.5112	0.7612	0.7226	0.8624	0.7143	
	14.6			CONTRIB	0.98%	49.23%	37.77%	6.99%	5.03%	3,279
		11.0	24	CONTRIB	4.29%	31.76%	47.91%	9.42%	6.63%	8,012
25				RATIOS	0.4916	0.9730	0.8226	0.4928	0.6950	
	16.7			CONTRIB	0.01%	60.52%	37.54%	0.01%	1.92%	3,280
		11.0	28	CONTRIB	2.93%	36.41%	55.06%	0.39%	5.20%	9,392
26				RATIOS	0.5934	1.2254	1.3856	0.9352	1.0349	
	25.8			CONTRIB	0.00%	32.43%	66.16%	0.27%	1.15%	3,280
		11.0	49	CONTRIB	4.20%	23.51%	56.76%	6.19%	9.34%	16,350
27				RATIOS	0.5118	0.8556	0.8486	0.9330	0.7872	
	16.7			CONTRIB	0.10%	45.62%	45.37%	4.82%	4.10%	3,279
		11.0	32	CONTRIB	3.25%	28.37%	52.22%	9.44%	6.71%	10,638
28				RATIOS	0.5272	0.6766	0.5670	0.3892	0.5400	
	11.9			CONTRIB	8.10%	58.42%	29.99%	0.11%	3.37%	3,279
		11.0	13	CONTRIB	9.34%	48.88%	37.75%	0.16%	3.88%	4,382
29				RATIOS	0.4964	0.5400	0.5214	0.7134	0.5678	
	10.9			CONTRIB	9.52%	40.02%	31.01%	12.09%	7.36%	3,279
		11.0	9	CONTRIB	9.48%	40.41%	30.44%	12.35%	7.33%	3,071
30				RATIOS	1.0482	1.2706	0.8290	0.3766	0.8811	
	20.1			CONTRIB	19.37%	67.73%	10.19%	0.00%	2.71%	3,280
		11.0	36	CONTRIB	15.84%	32.32%	43.47%	0.04%	8.32%	12,111

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Option C TEST DATE: 7/20/94

11-MPH COMFORT CRITERION: TENTH & MARKET SITE OPTION C SETTING

Loca-tion	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	1.2028	0.9486	0.4856	0.4412	0.7695	
	16.8			CONTRIB	38.57%	57.86%	0.00%	0.00%	3.57%	3,280
		11.0	20	CONTRIB	32.07%	49.47%	8.44%	0.26%	9.76%	6,826
2				RATIOS	0.1902	0.5444	0.3688	0.6780	0.4453	
	9.0			CONTRIB	0.00%	64.10%	10.17%	20.19%	5.53%	3,279
		11.0	5	CONTRIB	0.00%	76.30%	2.81%	18.34%	2.55%	1,687
3				RATIOS	0.4832	1.1750	0.4972	0.3896	0.6362	
	14.7			CONTRIB	0.47%	95.47%	1.54%	0.00%	2.52%	3,280
		11.0	15	CONTRIB	4.93%	74.23%	13.34%	0.14%	7.36%	5,069
4				RATIOS	0.7420	0.6884	0.4856	0.3702	0.5715	
	12.0			CONTRIB	27.99%	58.94%	8.65%	0.07%	4.36%	3,279
		11.0	12	CONTRIB	26.89%	53.34%	13.99%	0.11%	5.67%	4,118
5				RATIOS	0.6296	0.6278	0.5248	0.4688	0.5627	
	11.7			CONTRIB	20.97%	53.76%	20.01%	0.55%	4.70%	3,279
		11.0	11	CONTRIB	19.89%	49.02%	24.94%	0.68%	5.47%	3,917
6				RATIOS	1.0828	1.1878	0.5596	0.5404	0.8426	
	18.3			CONTRIB	25.57%	70.77%	0.00%	0.01%	3.64%	3,280
		11.0	25	CONTRIB	24.08%	46.02%	18.40%	0.81%	10.69%	8,222
7				RATIOS	1.0620	0.8816	0.3590	0.3134	0.6540	
	15.1			CONTRIB	36.92%	60.52%	0.00%	0.00%	2.56%	3,280
		11.0	16	CONTRIB	35.19%	57.11%	0.36%	0.00%	7.35%	5,522
8				RATIOS	0.3824	0.4762	0.3670	0.1908	0.3541	
	8.0			CONTRIB	12.24%	62.19%	22.69%	0.00%	2.88%	3,280
		11.0	2	CONTRIB	3.89%	90.23%	5.80%	0.00%	0.09%	780
9				RATIOS	0.2750	0.4662	0.3752	0.3278	0.3610	
	7.8			CONTRIB	1.10%	62.72%	31.70%	0.74%	3.74%	3,279
		11.0	2	CONTRIB	0.00%	91.60%	7.99%	0.06%	0.34%	698
10				RATIOS	0.0964	0.3328	0.3578	0.5902	0.3443	
	7.2			CONTRIB	0.00%	28.92%	39.48%	27.11%	4.48%	3,279
		11.0	0	CONTRIB	0.00%	15.42%	9.41%	75.10%	0.07%	162
11				RATIOS	1.0498	1.5494	1.0034	0.6952	1.0744	
	23.3			CONTRIB	8.71%	73.01%	14.66%	0.01%	3.61%	3,280
		11.0	47	CONTRIB	12.31%	27.10%	47.77%	2.21%	10.61%	15,616

WIND-TUNNEL TEST RESULTS

11-MPH COMFORT CRITERION: TENTH & MARKET SITE OPTION D SETTING

SF
SAN FRANCISCO, CALIFORNIA
GSA Project TEST DATE: 12/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 10.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	0.5878	1.3252	1.0048	0.7290	0.9117	
	21.1			CONTRIB	0.00%	67.50%	29.77%	0.18%	2.55%	3,280
		11.0	41	CONTRIB	4.92%	29.26%	54.64%	3.00%	8.18%	13,667
2				RATIOS	0.7178	0.4878	0.8894	1.1314	0.8066	
	16.4			CONTRIB	7.53%	0.55%	72.08%	14.55%	5.28%	3,279
		11.0	32	CONTRIB	9.78%	7.44%	58.69%	16.80%	7.29%	10,546
3				RATIOS	0.3216	0.4324	0.8148	1.0016	0.6426	
	14.5			CONTRIB	0.00%	0.57%	81.91%	14.59%	2.93%	3,280
		11.0	21	CONTRIB	0.00%	5.68%	70.77%	18.17%	5.38%	7,149
4				RATIOS	0.5406	0.8048	0.7414	0.5230	0.6524	
	14.8			CONTRIB	1.61%	54.40%	40.98%	0.21%	2.80%	3,280
		11.0	23	CONTRIB	6.08%	35.57%	52.47%	0.69%	5.19%	7,760
5				RATIOS	0.7590	0.5850	0.6162	0.7280	0.6720	
	12.7			CONTRIB	25.89%	28.00%	32.70%	5.66%	7.75%	3,280
		11.0	19	CONTRIB	18.15%	27.04%	41.55%	6.37%	6.88%	6,404
6				RATIOS	0.4890	0.6956	0.7716	0.7496	0.6764	
	14.6			CONTRIB	0.60%	33.08%	59.83%	2.75%	3.74%	3,280
		11.0	23	CONTRIB	3.40%	28.36%	56.75%	5.77%	5.72%	7,865
7				RATIOS	0.5362	0.5340	0.8238	0.6466	0.6351	
	14.3			CONTRIB	2.16%	7.79%	85.98%	1.16%	2.91%	3,280
		11.0	22	CONTRIB	6.07%	15.91%	69.98%	3.03%	5.00%	7,415
8				RATIOS	1.1578	1.4428	1.0776	0.7772	1.1138	
	24.0			CONTRIB	13.02%	63.25%	19.84%	0.10%	3.80%	3,280
		11.0	50	CONTRIB	12.85%	25.42%	47.67%	3.15%	10.92%	16,425
9				RATIOS	0.5118	1.1698	0.9422	0.7662	0.8475	
	19.4			CONTRIB	0.00%	63.37%	33.46%	0.49%	2.68%	3,280
		11.0	38	CONTRIB	2.76%	29.91%	56.30%	3.91%	7.13%	12,554
10				RATIOS	1.0340	0.4266	0.4802	0.3484	0.5723	
	10.7			CONTRIB	59.08%	13.50%	19.12%	0.10%	8.19%	3,279
		11.0	9	CONTRIB	62.56%	11.94%	17.63%	0.09%	7.77%	3,027
11				RATIOS	0.9252	0.6566	0.5582	0.5102	0.6625	
	13.1			CONTRIB	37.41%	41.94%	13.99%	0.46%	6.19%	3,279
		11.0	17	CONTRIB	29.83%	35.92%	26.05%	0.80%	7.39%	5,708
12				RATIOS	0.8536	0.8206	0.6588	0.5240	0.7142	
	15.0			CONTRIB	23.46%	55.03%	16.95%	0.19%	4.36%	3,280
		11.0	24	CONTRIB	18.63%	35.40%	38.68%	0.68%	6.62%	8,022
13				RATIOS	0.7890	0.8754	0.7648	0.4858	0.7287	
	16.1			CONTRIB	13.95%	54.34%	28.44%	0.02%	3.24%	3,280
		11.0	28	CONTRIB	13.50%	33.36%	46.75%	0.36%	6.03%	9,355
14				RATIOS	0.7144	0.7296	0.6140	0.3746	0.6081	
	13.4			CONTRIB	20.26%	54.38%	22.09%	0.00%	3.27%	3,279
		11.0	19	CONTRIB	16.00%	37.47%	41.35%	0.08%	5.09%	6,382

ca-ion	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
5				RATIOS	0.4792	0.6008	0.4740	0.6820	0.5590	
	10.8			CONTRIB	8.24%	56.70%	17.31%	10.64%	7.12%	3,279
		11.0	9	CONTRIB	7.80%	58.93%	15.99%	10.54%	6.75%	3,056
6				RATIOS	0.1380	0.1836	0.4984	0.8200	0.4100	
	9.4			CONTRIB	0.00%	0.00%	62.85%	34.42%	2.73%	3,279
		11.0	4	CONTRIB	0.00%	0.00%	51.66%	47.23%	1.11%	1,331
7				RATIOS	0.2494	0.2888	0.3738	0.8854	0.4493	
	8.0			CONTRIB	0.25%	5.75%	25.10%	58.63%	10.26%	3,280
		11.0	2	CONTRIB	0.00%	0.14%	5.77%	88.92%	5.18%	934
8				RATIOS	0.3874	0.4232	0.7204	0.5446	0.5189	
	12.2			CONTRIB	0.33%	4.30%	91.93%	1.10%	2.34%	3,279
		11.0	13	CONTRIB	0.80%	7.69%	86.81%	1.61%	3.09%	4,391
9				RATIOS	0.4754	0.4266	0.6628	0.4350	0.4999	
	11.6			CONTRIB	5.15%	7.02%	84.98%	0.35%	2.50%	3,279
		11.0	11	CONTRIB	5.90%	9.36%	81.46%	0.42%	2.85%	3,863
0				RATIOS	0.5450	0.7466	1.0788	0.8448	0.8038	
	19.0			CONTRIB	0.00%	12.56%	84.09%	1.08%	2.27%	3,280
		11.0	37	CONTRIB	4.03%	20.17%	63.89%	5.71%	6.21%	12,264
1				RATIOS	0.3358	0.8528	0.9520	0.6554	0.6990	
	17.8			CONTRIB	0.00%	33.92%	64.89%	0.31%	0.89%	3,280
		11.0	33	CONTRIB	0.03%	27.43%	65.75%	2.25%	4.54%	10,949
2				RATIOS	0.1620	0.2148	0.3898	0.7030	0.3674	
	7.5			CONTRIB	0.00%	0.22%	51.58%	43.22%	4.98%	3,280
		11.0	1	CONTRIB	0.00%	0.00%	18.12%	81.07%	0.81%	443
3				RATIOS	0.7042	0.9026	0.5008	1.0332	0.7852	
	14.9			CONTRIB	11.69%	64.10%	1.52%	14.87%	7.82%	3,280
		11.0	21	CONTRIB	13.89%	45.79%	9.97%	20.41%	9.94%	7,127
4				RATIOS	0.6172	0.5634	0.8302	0.9074	0.7295	
	15.2			CONTRIB	4.91%	7.55%	75.30%	7.65%	4.59%	3,280
		11.0	27	CONTRIB	8.29%	16.68%	58.66%	10.08%	6.29%	9,006
5				RATIOS	0.4754	0.9868	0.8398	0.4776	0.6949	
	17.0			CONTRIB	0.00%	60.19%	38.29%	0.00%	1.53%	3,280
		11.0	29	CONTRIB	2.37%	35.83%	56.41%	0.31%	5.08%	9,614
6				RATIOS	0.5282	1.1794	1.3736	0.9252	1.0016	
	25.4			CONTRIB	0.00%	29.32%	69.48%	0.28%	0.92%	3,280
		11.0	48	CONTRIB	2.62%	23.85%	58.37%	6.16%	8.99%	15,805
7				RATIOS	0.5222	0.8024	0.9514	1.0188	0.8237	
	17.8			CONTRIB	0.01%	25.80%	64.73%	5.74%	3.72%	3,280
		11.0	38	CONTRIB	3.09%	21.92%	57.41%	11.03%	6.54%	12,534
8				RATIOS	0.6086	0.5860	0.6110	0.4754	0.5702	
	12.1			CONTRIB	16.33%	35.48%	43.62%	0.48%	4.10%	3,279
		11.0	16	CONTRIB	13.60%	32.57%	48.96%	0.54%	4.33%	5,330
9				RATIOS	0.5552	0.5946	0.4654	0.6714	0.5716	
	11.0			CONTRIB	16.74%	54.10%	13.17%	8.85%	7.14%	3,279
		11.0	9	CONTRIB	16.74%	54.13%	13.16%	8.84%	7.13%	3,277
0				RATIOS	0.9714	1.0166	0.9018	0.4360	0.8314	
	19.1			CONTRIB	17.27%	52.72%	27.40%	0.00%	2.61%	3,280
		11.0	38	CONTRIB	14.24%	27.91%	50.99%	0.13%	6.73%	12,531

WIND-TUNNEL TEST RESULTS

11-MPH COMFORT CRITERION: TENTH & MARKET SITE
OPTION D SETTING

SF
SAN FRANCISCO, CALIFORNIA
GSA Project TEST DATE: 12/94

Location	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
31				RATIOS	1.1296	0.9980	0.5132	0.5142	0.7887	
	16.8			CONTRIB	33.65%	62.22%	0.00%	0.06%	4.07%	3,280
		11.0	21	CONTRIB	28.91%	48.58%	11.77%	0.68%	10.07%	7,132
32				RATIOS	0.2348	0.3776	0.3352	0.8870	0.4586	
	8.4			CONTRIB	0.00%	26.12%	8.05%	56.12%	9.71%	3,279
		11.0	3	CONTRIB	0.00%	12.40%	0.01%	81.45%	6.14%	1,026
33				RATIOS	0.4466	1.1234	0.4456	0.4160	0.6079	
	13.9			CONTRIB	0.36%	96.86%	0.12%	0.01%	2.66%	3,280
		11.0	13	CONTRIB	3.59%	82.41%	6.46%	0.27%	7.27%	4,463
38				RATIOS	0.3450	0.2928	0.4160	0.2250	0.3197	
	7.6			CONTRIB	9.38%	10.77%	77.62%	0.01%	2.22%	3,279
		11.0	0	CONTRIB	5.71%	1.06%	93.23%	0.00%	0.00%	160
39				RATIOS	0.4786	0.3950	0.3374	0.2732	0.3710	
	7.6			CONTRIB	28.92%	48.13%	17.79%	0.24%	4.92%	3,279
		11.0	1	CONTRIB	55.30%	43.71%	0.04%	0.00%	0.95%	428
40				RATIOS	0.6742	0.4136	0.3340	0.3496	0.4428	
	8.5			CONTRIB	48.14%	37.00%	6.81%	0.66%	7.39%	3,279
		11.0	3	CONTRIB	73.79%	22.70%	0.01%	0.23%	3.28%	1,222
41				RATIOS	0.8122	0.3786	0.4466	0.3302	0.4919	
	9.5			CONTRIB	52.64%	13.69%	26.59%	0.18%	6.91%	3,280
		11.0	5	CONTRIB	71.87%	6.96%	15.75%	0.04%	5.38%	1,869
42				RATIOS	0.2988	0.3064	0.4222	0.3396	0.3417	
	7.7			CONTRIB	3.51%	14.32%	78.10%	1.04%	3.02%	3,280
		11.0	0	CONTRIB	0.00%	2.46%	96.27%	1.23%	0.04%	179

WIND-TUNNEL TEST RESULTS

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Existing TEST DATE: 4/26/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 0.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Loca-tion	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	1.2356	1.3040	1.0772	0.8706	1.1218	
	47.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	11.47%	88.48%	0.01%	0.00%	0.04%	228
2				RATIOS	0.6960	0.5894	0.8884	1.2658	0.8599	
	39.2			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	7
3				RATIOS	0.4310	0.4268	0.9110	1.0804	0.7123	
	33.3			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	1
4				RATIOS	0.7068	0.6474	0.7984	0.6972	0.7124	
	29.0			CONTRIB	0.00%	72.47%	27.53%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
5				RATIOS	0.9446	0.5670	0.6450	0.6318	0.6971	
	30.9			CONTRIB	100.00%	0.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	100.00%	0.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.5214	0.7474	0.9690	0.9746	0.8031	
	30.8			CONTRIB	0.00%	0.41%	27.99%	71.60%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	0
7				RATIOS	0.6604	0.5938	0.8772	0.8630	0.7486	
	41.2			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
8				RATIOS	1.1718	1.5894	0.9370	0.8376	1.1339	
	57.7			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	2	CONTRIB	1.80%	98.18%	0.00%	0.00%	0.02%	783
9				RATIOS	0.5350	1.4196	0.9464	0.8636	0.9411	
	51.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	1	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	417
10				RATIOS	1.2520	1.0988	0.5646	0.7526	0.9170	
	41.3			CONTRIB	49.53%	50.47%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	50.38%	49.62%	0.00%	0.00%	0.00%	60
11				RATIOS	1.1254	1.0056	0.5448	0.7196	0.8488	
	40.5			CONTRIB	5.98%	94.02%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	65.40%	34.60%	0.00%	0.00%	0.00%	13
12				RATIOS	0.8978	0.8586	0.5554	0.5462	0.7145	
	30.9			CONTRIB	2.10%	97.90%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
13				RATIOS	0.7102	1.2240	0.4750	0.4746	0.7209	
	44.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	117
14				RATIOS	0.4310	0.8732	0.9284	0.4290	0.6654	
	31.6			CONTRIB	0.00%	99.85%	0.15%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Existing TEST DATE: 4/26/94

Loca-tion	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
15				RATIOS	0.5260	0.8744	0.4102	0.7612	0.6429	
	31.8			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
16				RATIOS	0.7508	0.5128	0.3284	0.8902	0.6205	
	27.3			CONTRIB	0.06%	0.00%	0.00%	99.94%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
17				RATIOS	0.9430	0.3374	0.3256	0.9266	0.6331	
	37.6			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	68.60%	0.00%	0.00%	31.40%	0.00%	0
18				RATIOS	0.5694	0.8688	0.3978	0.7294	0.6413	
	31.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
19				RATIOS	0.4282	1.0654	0.6152	0.6768	0.6964	
	38.4			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	16
20				RATIOS	0.6164	0.8760	1.2546	0.9232	0.9175	
	39.2			CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.03%	99.97%	0.00%	0.00%	69
21				RATIOS	0.5260	0.8592	0.9122	0.8382	0.7839	
	31.1			CONTRIB	0.00%	99.85%	0.14%	0.02%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
22				RATIOS	0.2514	0.4022	0.4028	0.5398	0.3990	
	16.3			CONTRIB	0.00%	0.99%	0.00%	99.01%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
23				RATIOS	0.7124	0.8006	0.4896	1.1018	0.7761	
	33.9			CONTRIB	0.00%	0.10%	0.00%	99.90%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	2
24				RATIOS	0.5514	0.7816	0.6292	0.8018	0.6910	
	28.2			CONTRIB	0.00%	99.46%	0.00%	0.54%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
25				RATIOS	0.5084	1.0720	0.6846	0.5612	0.7065	
	38.7			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	18
26				RATIOS	0.6842	1.3660	1.5268	1.0976	1.1686	
	49.7			CONTRIB	0.00%	94.95%	5.05%	0.00%	0.00%	3
		36.0	2	CONTRIB	0.00%	40.46%	59.13%	0.24%	0.16%	741
27				RATIOS	0.5406	0.9770	0.8630	0.9624	0.8357	
	35.3			CONTRIB	0.00%	99.97%	0.00%	0.03%	0.00%	4
		36.0	0	CONTRIB	0.00%	99.98%	0.00%	0.01%	0.00%	3
28				RATIOS	0.6242	0.7190	0.5408	0.4816	0.5914	
	26.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
29				RATIOS	0.6046	0.4738	0.6260	0.7306	0.6087	
	22.5			CONTRIB	0.01%	0.00%	0.00%	99.98%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
30				RATIOS	0.8848	1.3296	0.7398	0.4988	0.8632	
	48.1			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	238

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Existing TEST DATE: 4/26/94

oca-tion	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
31				RATIOS	1.2536	1.1256	0.5488	0.5688	0.8742	
	41.4			CONTRIB	37.35%	62.65%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	38.33%	61.67%	0.00%	0.00%	0.00%	81
32				RATIOS	0.3892	0.4446	0.3920	0.8220	0.5119	
	25.2			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
33				RATIOS	0.4616	1.3028	0.8700	0.5324	0.7917	
	47.4			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	200

WIND-TUNNEL TEST RESULTS

HAZARD CRITERION: TENTH & MARKET SITE OPTION A SETTING

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Alternative2

TEST DATE: 4/26/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 0.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	1.3382	1.8036	0.9720	0.7378	1.2129	
	65.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	4	CONTRIB	4.62%	95.10%	0.00%	0.00%	0.28%	1,430
2				RATIOS	0.8242	0.7236	0.9532	1.1886	0.9224	
	36.7			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
3				RATIOS	0.4232	0.4000	0.7662	1.0536	0.6607	
	32.3			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	0
4				RATIOS	0.7174	0.7512	0.7182	0.6434	0.7075	
	27.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
5				RATIOS	0.8320	0.5158	0.5588	0.7516	0.6645	
	35.0			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.6920	0.6364	0.6514	0.6660	0.6614	
	26.6			CONTRIB	0.63%	99.37%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
7				RATIOS	0.8104	0.6618	0.7538	0.6394	0.7163	
	37.3			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
8				RATIOS	1.5312	1.5112	1.0892	0.8222	1.2384	
	55.0			CONTRIB	0.15%	99.85%	0.00%	0.00%	0.00%	3
		36.0	2	CONTRIB	25.20%	74.15%	0.01%	0.00%	0.64%	826
9				RATIOS	0.9450	1.4688	0.8742	0.9242	1.0530	
	53.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	1	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	539
10				RATIOS	1.3290	1.2848	0.3748	0.4040	0.8481	
	46.5			CONTRIB	0.78%	99.22%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	25.57%	74.43%	0.00%	0.00%	0.00%	239
11				RATIOS	1.0870	0.9912	0.3646	0.6148	0.7644	
	36.1			CONTRIB	24.29%	75.71%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	27.44%	72.56%	0.00%	0.00%	0.00%	5
12				RATIOS	1.0286	0.9718	0.5782	0.4940	0.7681	
	35.1			CONTRIB	4.21%	95.79%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	1.26%	98.74%	0.00%	0.00%	0.00%	2
13				RATIOS	1.0192	1.1912	0.5942	0.4456	0.8125	
	43.1			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.02%	99.98%	0.00%	0.00%	0.00%	93
14				RATIOS	0.8584	0.9064	0.5200	0.4570	0.6854	
	32.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0

Location	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
5				RATIOS	0.6242	0.7288	0.5388	0.6542	0.6365	
	26.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.2914	0.3800	0.4320	0.9026	0.5015	
	27.8			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
7				RATIOS	0.3080	0.4236	0.3960	0.9436	0.5178	
	29.2			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	0
8				RATIOS	0.5444	0.7018	0.5612	0.5646	0.5930	
	25.[illegible]			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
9				RATIOS	0.7670	0.7630	0.5086	0.5754	0.6535	
	27.4			CONTRIB	0.15%	99.85%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
0				RATIOS	0.5554	0.8400	1.1612	0.9778	0.8836	
	41.9			CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.02%	99.97%	0.01%	0.00%	8
1				RATIOS	0.8078	1.0094	0.9606	0.7646	0.8856	
	36.4			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	5
2				RATIOS	0.2440	0.2558	0.3708	0.8324	0.4257	
	25.7			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
3				RATIOS	0.6920	1.0064	0.5932	1.0952	0.8467	
	[illegible]			CONTRIB	0.00%	86.73%	0.00%	13.27%	0.00%	4
		36.0	0	CONTRIB	0.00%	75.17%	0.00%	24.83%	0.00%	6
4				RATIOS	0.5240	0.8564	0.9702	0.8052	0.7889	
	31.3			CONTRIB	0.00%	89.77%	10.23%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
5				RATIOS	0.7780	1.1294	0.9800	0.4666	0.8385	
	40.8			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	53
6				RATIOS	0.5950	1.3906	1.3686	1.0878	1.1105	
	50.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	1	CONTRIB	0.00%	68.84%	30.96%	0.20%	0.01%	508
7				RATIOS	0.5400	0.9342	1.0080	1.0700	0.8880	
	35.1			CONTRIB	0.00%	50.13%	0.03%	49.84%	0.00%	3
		36.0	0	CONTRIB	0.00%	73.71%	0.01%	26.28%	0.00%	1
8				RATIOS	0.9058	0.8152	0.8052	0.4096	0.7339	
	30.0			CONTRIB	34.65%	65.35%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
9				RATIOS	0.8458	0.5918	0.4240	0.6724	0.6335	
	34.4			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
30				RATIOS	1.2782	1.3848	0.8680	0.5636	1.0236	
	50.1			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	1	CONTRIB	10.31%	89.69%	0.00%	0.00%	0.00%	376

Location	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
31				RATIOS	1.3008	0.9964	0.5148	0.5448	0.8392	
	42.4			CONTRIB	99.94%	0.06%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	92.51%	7.49%	0.00%	0.00%	0.00%	51
32				RATIOS	0.1972	0.3806	0.3914	0.9082	0.4693	
	28.0			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	(.00%	0
33				RATIOS	0.4534	1.4470	0.4298	0.4222	0.6881	
	52.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	1	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	491

WIND-TUNNEL TEST RESULTS

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Project1 TEST DATE: 4/26/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 0.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	1.1922	1.5884	1.0582	0.7422	1.1452	
	57.8			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	2	CONTRIB	2.20%	97.76%	0.00%	0.00%	0.04%	785
2				RATIOS	0.7600	0.6250	1.0474	1.2498	0.9205	
	38.4			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.05%	99.95%	0.00%	6
3				RATIOS	0.3938	0.3512	0.8548	1.1040	0.6759	
	34.1			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	2
4				RATIOS	0.5988	0.6800	0.7742	0.6746	0.6819	
	28.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
5				RATIOS	0.8928	0.4838	0.5938	0.7150	0.6713	
	48.9			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.5356	0.6422	0.7560	0.7196	0.6633	
	25.3			CONTRIB	0.00%	85.79%	7.33%	6.88%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
7				RATIOS	0.6600	0.5762	0.7862	0.6526	0.6687	
	27.4			CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
8				RATIOS	1.2428	1.5494	0.9658	0.7346	1.1231	
	56.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	2	CONTRIB	3.92%	96.07%	0.00%	0.00%	0.01%	714
9				RATIOS	0.6678	1.4194	0.9188	0.8440	0.9625	
	51.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	1	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	417
10				RATIOS	1.2378	0.9466	0.3794	0.2560	0.7049	
	40.4			CONTRIB	99.94%	0.06%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	95.31%	4.69%	0.00%	0.00%	0.00%	28
11				RATIOS	1.0606	0.9328	0.3508	0.3342	0.6696	
	34.9			CONTRIB	52.79%	47.21%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	21.07%	78.93%	0.00%	0.00%	0.00%	1
12				RATIOS	0.9228	0.8156	0.4178	0.2826	0.6097	
	54.5			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	5.95%	94.05%	0.00%	0.00%	0.00%	0
13				RATIOS	0.9300	1.1600	0.3582	0.4618	0.7275	
	41.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	74
14				RATIOS	0.8450	0.9538	0.4012	0.2456	0.6114	
	34.4			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	2

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Project1 TEST DATE: 4/26/94

Location	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
15				RATIOS	0.6678	0.8778	0.3234	0.8208	0.6724	
	31.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
16				RATIOS	0.2244	0.3294	0.4102	0.9248	0.4722	
	28.4			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	0
17				RATIOS	0.4978	0.3884	0.4520	0.9000	0.5595	
	27.5			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
18				RATIOS	0.6284	0.8100	0.4212	0.7612	0.6552	
	29.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
19				RATIOS	0.6438	0.9344	0.3812	0.7722	0.6829	
	33.8			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	1
20				RATIOS	0.5500	0.7766	1.2538	0.9394	0.8799	
	47.8			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	68
21				RATIOS	0.7912	0.9256	0.9068	0.8994	0.8807	
	33.3			CONTRIB	0.00%	99.98%	0.00%	0.02%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	1
22				RATIOS	0.2216	0.3578	0.2640	0.4554	0.3247	
	26.5			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
23				RATIOS	0.6988	0.9062	0.5092	1.1168	0.8077	
	35.3			CONTRIB	0.00%	16.16%	0.00%	83.84%	0.00%	3
		36.0	0	CONTRIB	0.00%	6.34%	0.00%	93.66%	0.00%	2
24				RATIOS	0.5534	0.8600	0.8148	0.8018	0.7575	
	31.0			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
25				RATIOS	0.5522	1.1016	0.7828	0.4902	0.7317	
	39.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	32
26				RATIOS	0.6800	1.3028	1.4818	1.1012	1.1414	
	47.5			CONTRIB	0.00%	84.70%	15.30%	0.00%	0.00%	4
		36.0	1	CONTRIB	0.00%	37.18%	62.39%	0.38%	0.05%	538
27				RATIOS	0.5238	0.7912	0.9612	0.9930	0.8173	
	31.2			CONTRIB	0.00%	7.32%	6.99%	85.69%	0.00%	3
		36.0	0	CONTRIB	0.00%	1.41%	0.00%	98.59%	0.00%	0
28				RATIOS	0.6428	0.7372	0.5794	0.4312	0.5976	
	26.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
29				RATIOS	0.6706	0.4694	0.5028	0.7284	0.5928	
	22.4			CONTRIB	17.21%	0.00%	0.00%	82.79%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
30				RATIOS	1.1594	1.3506	0.5560	0.5208	0.8967	
	48.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	4.38%	95.62%	0.00%	0.00%	0.00%	285

WIND-TUNNEL TEST RESULTS

HAZARD CRITERION: TENTH & MARKET SITE
OPTION B SETTING

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Project1 TEST DATE: 4/26/94

Location	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
31				RATIOS	1.2072	0.9344	0.5280	0.6144	0.8210	
	39.4			CONTRIB	99.88%	0.12%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	95.24%	4.76%	0.00%	0.00%	0.00%	21
32				RATIOS	0.2772	0.2850	0.4274	0.8774	0.4667	
	27.0			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
33				RATIOS	0.4422	1.3206	0.7286	0.3884	0.7199	
	47.8			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	225

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 0.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	0.01141% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	1.0498	1.3520	1.0034	0.6952	1.0251	
	49.0			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.04%	99.96%	0.00%	0.00%	0.00%	275
2				RATIOS	0.6630	0.5412	0.9930	1.0160	0.8033	
	31.9			CONTRIB	0.00%	0.00%	14.26%	85.74%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.37%	99.63%	0.00%	0
3				RATIOS	0.3666	0.5094	0.7816	0.8848	0.6356	
	27.4			CONTRIB	0.00%	0.00%	0.02%	99.98%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
4				RATIOS	0.5480	0.7034	0.7456	0.4522	0.6123	
	25.3			CONTRIB	0.00%	99.83%	0.17%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
5				RATIOS	1.0684	0.5090	0.5982	0.6264	0.7005	
	34.9			CONTRIB	100.00%	0.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	100.00%	0.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.4548	0.6494	0.8636	0.6710	0.6597	
	49.0			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
7				RATIOS	0.8992	0.8556	0.9768	0.8298	0.8903	
	49.4			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
8				RATIOS	1.2050	1.4962	0.9664	0.7714	1.1097	
	54.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	1	CONTRIB	3.23%	96.77%	0.00%	0.00%	0.01%	605
9				RATIOS	0.5020	1.0670	0.7550	0.8230	0.7867	
	38.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	16
10				RATIOS	0.8942	1.1340	0.5624	0.4510	0.7604	
	41.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	58
11				RATIOS	0.8116	1.0670	0.5976	0.4132	0.7223	
	38.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	16
12				RATIOS	0.6598	0.7558	0.4988	0.3530	0.5668	
	27.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
13				RATIOS	1.1020	1.0650	0.7606	0.3134	0.8102	
	38.7			CONTRIB	0.71%	99.29%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	17.71%	82.29%	0.00%	0.00%	0.00%	19
14				RATIOS	0.6192	0.5808	0.5214	0.2596	0.4952	
	21.1			CONTRIB	5.21%	94.79%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0

Location	0.01141% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
15				RATIOS	0.5430	0.6520	0.4624	0.4780	0.5338	
	23.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
16				RATIOS	0.1610	0.2694	0.3648	0.7508	0.3865	
	22.9			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
17				RATIOS	0.3392	0.7678	0.4948	0.6578	0.5649	
	27.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
18				RATIOS	0.5090	0.4670	0.4832	0.6316	0.5227	
	19.3			CONTRIB	0.00%	0.36%	0.00%	99.63%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
19				RATIOS	0.5972	0.7854	0.6232	0.4362	0.6105	
	28.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
20				RATIOS	0.6006	0.7132	1.1826	0.8310	0.8318	
	45.2			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	33
21				RATIOS	0.7168	0.8378	0.9150	0.6058	0.7688	
	30.2			CONTRIB	0.00%	98.34%	1.66%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
22				RATIOS	0.2350	0.3178	0.3514	0.2762	0.2951	
	21.9			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
23				RATIOS	0.7748	0.8338	0.4688	1.0086	0.7715	
	31.8			CONTRIB	0.00%	30.52%	0.00%	69.48%	0.00%	4
		36.0	0	CONTRIB	0.00%	11.25%	0.00%	88.75%	0.00%	0
24				RATIOS	0.5112	0.7612	0.7226	0.8624	0.7143	
	40.4			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
25				RATIOS	0.4916	0.9730	0.8226	0.4928	0.6950	
	35.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	2
26				RATIOS	0.5934	1.2254	1.3856	0.9352	1.0349	
	44.5			CONTRIB	0.00%	86.40%	13.60%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	40.10%	59.90%	0.00%	0.00%	295
27				RATIOS	0.5118	0.8556	0.8486	0.9330	0.7872	
	31.3			CONTRIB	0.00%	88.16%	0.00%	11.84%	0.00%	3
		36.0	0	CONTRIB	0.00%	98.91%	0.00%	1.09%	0.00%	0
28				RATIOS	0.5272	0.6766	0.5670	0.3892	0.5400	
	24.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
29				RATIOS	0.4964	0.5400	0.5214	0.7134	0.5678	
	21.9			CONTRIB	0.00%	1.23%	0.00%	98.77%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
30				RATIOS	1.0482	1.2706	0.8290	0.3766	0.8811	
	45.7			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.07%	99.93%	0.00%	0.00%	0.00%	162

WIND-TUNNEL TEST RESULTS

HAZARD CRITERION: TENTH & MARKET SITE
OPTION C SETTING

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Option C TEST DATE: 7/20/94

Location	0.01141% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
31				RATIOS	1.2028	0.9486	0.4856	0.4412	0.7695	
	39.3			CONTRIB	99.63%	0.37%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	93.31%	6.69%	0.00%	0.00%	0.00%	20
32				RATIOS	0.1902	0.5444	0.3688	0.6780	0.4453	
	21.0			CONTRIB	0.00%	22.93%	0.00%	77.07%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
33				RATIOS	0.4832	1.1750	0.4972	0.3896	0.6362	
	42.4			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	83
34				RATIOS	0.7420	0.6884	0.4856	0.3702	0.5715	
	25.1			CONTRIB	9.31%	90.69%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
35				RATIOS	0.6296	0.6278	0.5248	0.4688	0.5627	
	22.7			CONTRIB	0.10%	99.90%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
36				RATIOS	1.0828	1.1878	0.5596	0.5404	0.8426	
	43.0			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	1.09%	98.91%	0.00%	0.00%	0.00%	92
				RATIOS	1.0620	0.8816	0.3590	0.3134	0.6540	
	34.7			CONTRIB	92.41%	7.59%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	89.98%	10.02%	0.00%	0.00%	0.00%	0
38				RATIOS	0.3824	0.4762	0.3670	0.1908	0.3541	
	25.1			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
39				RATIOS	0.2750	0.4662	0.3752	0.3278	0.3610	
	16.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
40				RATIOS	0.0964	0.3328	0.3578	0.5902	0.3443	
	18.2			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
41				RATIOS	1.0498	1.5494	1.0034	0.6952	1.0744	
	56.1			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	2	CONTRIB	0.02%	99.98%	0.00%	0.00%	0.00%	686

WIND-TUNNEL TEST RESULTS

HAZARD CRITERION: TENTH & MARKET SITE
OPTION D SETTING

SF
SAN FRANCISCO, CALIFORNIA
GSA Project TEST DATE: 12/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 0.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	0.01141% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	0.5878	1.3252	1.0048	0.7290	0.9117	
	48.1			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	231
2				RATIOS	0.7178	0.4878	0.8894	1.1314	0.8066	
	34.8			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
3				RATIOS	0.3216	0.4324	0.8148	1.0016	0.6426	
	30.7			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	0
4				RATIOS	0.5406	0.8048	0.7414	0.5230	0.6524	
	29.0			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
5				RATIOS	0.7590	0.5850	0.6162	0.7280	0.6720	
	24.7			CONTRIB	95.42%	0.08%	0.00%	4.49%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.4890	0.6956	0.7716	0.7496	0.6764	
	25.3			CONTRIB	0.00%	89.01%	3.01%	7.98%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
7				RATIOS	0.5362	0.5340	0.8238	0.6466	0.6351	
	30.6			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
8				RATIOS	1.1578	1.4428	1.0776	0.7772	1.1138	
	52.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	1	CONTRIB	2.50%	97.49%	0.01%	0.00%	0.01%	491
9				RATIOS	0.5118	1.1698	0.9422	0.7662	0.8475	
	42.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	80
10				RATIOS	1.0340	0.4266	0.4802	0.3484	0.5723	
	33.8			CONTRIB	100.00%	0.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	100.00%	0.00%	0.00%	0.00%	0.00%	0
11				RATIOS	0.9252	0.6566	0.5582	0.5102	0.6625	
	49.2			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	100.00%	0.00%	0.00%	0.00%	0.00%	0
12				RATIOS	0.8536	0.8206	0.6588	0.5240	0.7142	
	29.6			CONTRIB	1.30%	98.70%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
13				RATIOS	0.7890	0.8754	0.7648	0.4858	0.7287	
	31.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
14				RATIOS	0.7144	0.7296	0.6140	0.3746	0.6081	
	26.4			CONTRIB	0.02%	99.98%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0

WIND-TUNNEL TEST RESULTS

HAZARD CRITERION: TENTH & MARKET SITE
OPTION D SETTING

SF
SAN FRANCISCO, CALIFORNIA
GSA Project TEST DATE: 12/94

Location	0.01141% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
15				RATIOS	0.4792	0.6008	0.4740	0.6820	0.5590	
	26.7			CONTRIB	0.00%	89.40%	0.00%	10.60%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
16				RATIOS	0.1380	0.1836	0.4984	0.8200	0.4100	
	25.4			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
17				RATIOS	0.2494	0.2888	0.3738	0.8854	0.4493	
	27.3			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
18				RATIOS	0.3874	0.4232	0.7204	0.5446	0.5189	
	27.2			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
19				RATIOS	0.4754	0.4266	0.6628	0.4350	0.4999	
	30.4			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
20				RATIOS	0.5450	0.7466	1.0788	0.8448	0.8038	
	33.8			CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	0
21				RATIOS	0.3358	0.8528	0.9520	0.6554	0.6990	
	30.8			CONTRIB	0.00%	93.12%	6.88%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
22				RATIOS	0.1620	0.2148	0.3898	0.7030	0.3674	
	21.6			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
23				RATIOS	0.7042	0.9026	0.5008	1.0332	0.7852	
	33.9			CONTRIB	0.00%	49.23%	0.00%	50.77%	0.00%	3
		36.0	0	CONTRIB	0.00%	76.76%	0.00%	23.24%	0.00%	0
24				RATIOS	0.6172	0.5634	0.8302	0.9074	0.7295	
	28.1			CONTRIB	0.00%	0.00%	0.30%	99.70%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
25				RATIOS	0.4754	0.9868	0.8398	0.4776	0.6949	
	35.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
26				RATIOS	0.5282	1.1794	1.3736	0.9252	1.0016	
	43.6			CONTRIB	0.00%	63.45%	36.55%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	34.39%	65.60%	0.00%	0.00%	248
27				RATIOS	0.5222	0.8024	0.9514	1.0188	0.8237	
	31.6			CONTRIB	0.00%	7.28%	1.08%	91.64%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.64%	0.00%	99.36%	0.00%	0
28				RATIOS	0.6086	0.5860	0.6110	0.4754	0.5702	
	21.3			CONTRIB	0.79%	99.19%	0.03%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
29				RATIOS	0.5552	0.5946	0.4654	0.6714	0.5716	
	24.7			CONTRIB	0.00%	90.25%	0.00%	9.75%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
30				RATIOS	0.9714	1.0166	0.9018	0.4360	0.8314	
	36.7			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.01%	99.99%	0.00%	0.00%	0.00%	6

WIND-TUNNEL TEST RESULTS

HAZARD CRITERION: TENTH & MARKET SITE
OPTION D SETTING

SF
SAN FRANCISCO, CALIFORNIA
GSA Project TEST DATE: 12/94

Location	0.01141% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
31				RATIOS	1.1296	0.9980	0.5132	0.5142	0.7887	
	37.2			CONTRIB	49.35%	50.65%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	69.83%	30.17%	0.00%	0.00%	0.00%	13
32				RATIOS	0.2348	0.3776	0.3352	0.8870	0.4586	
	27.4			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
33				RATIOS	0.4466	1.1234	0.4456	0.4160	0.6079	
	40.8			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	48
38				RATIOS	0.3450	0.2928	0.4160	0.2250	0.3197	
	14.9			CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
39				RATIOS	0.4786	0.3950	0.3374	0.2732	0.3710	
	26.6			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
40				RATIOS	0.6742	0.4136	0.3340	0.3496	0.4428	
	22.0			CONTRIB	100.00%	0.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
41				RATIOS	0.8122	0.3786	0.4466	0.3302	0.4919	
	32.4			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
42				RATIOS	0.2988	0.3064	0.4222	0.3396	0.3417	
	23.0			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0

SAN FRANCISCO, CALIFORNIA
FED. COURT-EXISTING TEST DATE: 5/24/94

The ratios of pedestrian-level wind speeds to the 122-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 10.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Loca-tion	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	0.6596	0.5491	0.9544	0.3724	0.6339	
	16.2			CONTRIB	4.92%	3.44%	90.81%	0.00%	0.83%	3,280
		11.0	29	CONTRIB	8.80%	13.68%	73.70%	0.05%	3.77%	9,785
2				RATIOS	0.5610	0.5371	0.4518	0.4764	0.5066	
	10.2			CONTRIB	22.01%	52.36%	18.48%	1.50%	5.66%	3,280
		11.0	6	CONTRIB	25.62%	53.38%	14.48%	1.29%	5.23%	2,270
3				RATIOS	0.3744	0.5966	0.8000	0.5842	0.5888	
	14.4			CONTRIB	0.00%	17.80%	80.06%	0.60%	1.54%	3,280
		11.0	21	CONTRIB	0.34%	25.29%	68.85%	1.61%	3.92%	7,046
4				RATIOS	0.4507	0.7834	0.9374	0.5618	0.6833	
	17.2			CONTRIB	0.00%	26.64%	72.26%	0.11%	0.99%	3,280
		11.0	31	CONTRIB	1.63%	25.62%	67.44%	0.84%	4.48%	10,358
5				RATIOS	0.5955	0.5051	0.7538	0.4214	0.5690	
	13.4			CONTRIB	7.98%	8.40%	81.29%	0.08%	2.25%	3,279
		11.0	18	CONTRIB	11.38%	15.10%	69.56%	0.22%	3.74%	6,082
6				RATIOS	0.5755	0.5731	0.3960	0.6202	0.5412	
	10.3			CONTRIB	22.57%	56.43%	5.34%	8.07%	7.59%	3,279
		11.0	8	CONTRIB	23.80%	60.10%	3.46%	6.28%	6.37%	2,701
7				RATIOS	0.4958	0.8851	0.5674	0.5016	0.6125	
	13.0			CONTRIB	2.80%	76.06%	16.54%	0.43%	4.17%	3,279
		11.0	16	CONTRIB	5.26%	57.71%	30.24%	0.75%	6.04%	5,496
8				RATIOS	0.5304	0.6080	0.4912	0.5720	0.5504	
	10.9			CONTRIB	13.66%	56.70%	20.33%	3.21%	6.10%	3,279
		11.0	9	CONTRIB	13.37%	57.88%	19.67%	3.10%	5.97%	3,165
9				RATIOS	0.4802	0.9406	0.7870	0.8388	0.7616	
	16.2			CONTRIB	0.01%	59.85%	33.24%	2.87%	4.02%	3,280
		11.0	29	CONTRIB	2.51%	35.01%	48.65%	7.11%	6.72%	9,603
10				RATIOS	0.5114	0.9223	0.7612	0.7000	0.7237	
	15.7			CONTRIB	0.44%	61.20%	33.59%	1.09%	3.67%	3,280
		11.0	27	CONTRIB	3.87%	37.37%	48.58%	3.97%	6.20%	8,906
11				RATIOS	0.2635	0.1771	0.3476	0.7904	0.3947	
	7.2			CONTRIB	1.58%	0.00%	31.11%	57.99%	9.32%	3,280
		11.0	1	CONTRIB	0.00%	0.00%	0.29%	98.09%	1.61%	561
12				RATIOS	0.5944	1.0326	0.7104	0.4540	0.6978	
	15.6			CONTRIB	2.67%	72.64%	21.62%	0.00%	3.06%	3,280
		11.0	25	CONTRIB	8.18%	41.86%	43.83%	0.26%	5.87%	8,421
13				RATIOS	0.6189	0.6343	0.5616	0.7366	0.6379	
	12.3			CONTRIB	16.34%	47.02%	21.93%	7.71%	7.00%	3,279
		11.0	15	CONTRIB	14.87%	38.58%	30.68%	8.43%	7.44%	5,052
14				RATIOS	0.5660	0.8606	0.6670	0.8230	0.7291	
	14.5			CONTRIB	3.54%	61.96%	23.19%	5.40%	5.92%	3,280
		11.0	24	CONTRIB	7.60%	37.81%	39.66%	7.91%	7.02%	8,051

Sec-tion	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
15				RATIOS	0.5192	0.8811	0.7318	0.6748	0.7017	
	15.1			CONTRIB	0.83%	60.64%	33.57%	1.11%	3.85%	3,280
		11.0	25	CONTRIB	4.53%	38.05%	47.72%	3.62%	6.07%	8,281
16				RATIOS	0.6652	0.8423	0.7758	0.8466	0.7825	
	16.0			CONTRIB	5.64%	52.17%	33.67%	3.41%	5.12%	3,279
		11.0	29	CONTRIB	8.99%	30.25%	46.34%	7.24%	7.19%	9,753
17				RATIOS	0.6496	0.8771	0.7668	0.8550	0.7871	
	16.0			CONTRIB	4.90%	55.28%	30.92%	3.63%	5.27%	3,279
		11.0	29	CONTRIB	8.49%	31.91%	44.86%	7.46%	7.28%	9,809
18				RATIOS	0.4240	1.0051	0.9030	0.7780	0.7775	
	18.1			CONTRIB	0.00%	56.26%	40.43%	0.85%	2.45%	3,280
		11.0	34	CONTRIB	0.90%	31.06%	57.26%	4.64%	6.14%	11,194
19				RATIOS	0.3939	0.6800	0.7188	0.7168	0.6274	
	13.8			CONTRIB	0.00%	38.79%	54.80%	3.01%	3.40%	3,280
		11.0	20	CONTRIB	0.63%	32.03%	56.30%	5.73%	5.30%	6,736
20				RATIOS	0.5343	1.0806	0.7126	0.7708	0.7746	
	16.0			CONTRIB	0.56%	74.60%	18.35%	1.76%	4.72%	3,280
		11.0	27	CONTRIB	4.93%	40.31%	41.55%	5.61%	7.60%	8,947
21				RATIOS	0.5799	0.8497	0.7612	0.6752	0.7165	
	15.4			CONTRIB	2.29%	55.56%	37.40%	0.96%	3.79%	3,280
		11.0	26	CONTRIB	7.42%	33.94%	49.14%	3.42%	6.09%	8,805
22				RATIOS	0.2362	0.3423	0.3820	0.7180	0.4196	
	7.9			CONTRIB	0.02%	21.23%	31.94%	38.90%	7.92%	3,279
		11.0	1	CONTRIB	0.00%	8.66%	12.76%	74.73%	3.85%	519
23				RATIOS	0.4128	0.3194	0.4540	0.5012	0.4219	
	13.0			CONTRIB	11.13%	0.04%	73.04%	14.33%	1.45%	99
		11.0	1	CONTRIB	15.04%	2.15%	70.14%	8.31%	4.36%	491
24				RATIOS	0.2178	0.2971	0.3966	0.5186	0.3575	
	10.3			CONTRIB	0.00%	3.43%	65.37%	29.02%	2.18%	275
		11.0	0	CONTRIB	0.00%	1.55%	63.51%	34.09%	0.86%	149
25				RATIOS	0.5181	0.7960	0.7374	0.6512	0.6757	
	14.8			CONTRIB	1.03%	53.85%	40.63%	1.01%	3.49%	3,280
		11.0	23	CONTRIB	4.76%	34.86%	51.61%	3.03%	5.75%	7,792
26				RATIOS	0.2240	0.3309	0.4754	0.7866	0.4542	
	9.1			CONTRIB	0.00%	6.34%	55.20%	32.78%	5.68%	3,280
		11.0	3	CONTRIB	0.00%	1.97%	44.64%	48.41%	4.97%	1,116
27				RATIOS	0.2992	0.6000	0.8716	0.9034	0.6685	
	15.6			CONTRIB	0.00%	10.40%	80.91%	6.26%	2.44%	3,280
		11.0	27	CONTRIB	0.00%	19.90%	65.41%	9.89%	4.80%	9,032

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The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 10.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	0.6732	0.5213	0.9022	0.4096	0.6266	
	15.5			CONTRIB	7.11%	3.23%	88.39%	0.00%	1.27%	3,280
		11.0	26	CONTRIB	10.31%	12.14%	73.34%	0.13%	4.08%	8,721
2				RATIOS	0.5887	0.5337	0.4426	0.3960	0.4903	
	10.1			CONTRIB	24.89%	52.58%	17.10%	0.48%	4.96%	3,280
		11.0	6	CONTRIB	30.28%	52.80%	12.12%	0.37%	4.43%	2,229
3				RATIOS	0.3656	0.5022	0.7728	0.5764	0.5543	
	13.3			CONTRIB	0.00%	8.81%	88.36%	0.90%	1.92%	3,279
		11.0	17	CONTRIB	0.32%	15.72%	78.69%	1.82%	3.45%	5,693
4				RATIOS	0.4011	0.6174	0.9268	0.7184	0.6659	
	16.1			CONTRIB	0.00%	10.23%	86.87%	1.10%	1.79%	3,280
		11.0	29	CONTRIB	0.55%	19.62%	71.26%	4.07%	4.49%	9,549
5				RATIOS	0.6039	0.5275	0.7086	0.5498	0.5975	
	13.1			CONTRIB	10.06%	15.32%	70.43%	0.74%	3.44%	3,279
		11.0	17	CONTRIB	12.14%	19.01%	62.47%	1.28%	5.10%	5,874
6				RATIOS	0.4744	0.8680	0.8694	0.4772	0.6722	
	16.8			CONTRIB	0.00%	47.43%	51.46%	0.00%	1.11%	3,280
		11.0	29	CONTRIB	2.33%	31.93%	60.86%	0.31%	4.57%	9,652
7				RATIOS	0.6851	0.9680	0.6614	0.2282	0.6357	
	15.0			CONTRIB	9.64%	70.32%	17.73%	0.00%	2.30%	3,280
		11.0	23	CONTRIB	11.89%	43.47%	39.90%	0.00%	4.74%	7,848
8				RATIOS	0.4118	0.5225	0.5238	0.2164	0.4186	
	10.2			CONTRIB	4.67%	45.38%	48.43%	0.00%	1.52%	3,280
		11.0	6	CONTRIB	3.38%	50.33%	45.38%	0.00%	0.91%	2,125
9				RATIOS	0.4546	0.3017	0.3920	0.2192	0.3419	
	10.6			CONTRIB	62.77%	2.04%	34.94%	0.00%	0.25%	351
		11.0	0	CONTRIB	66.78%	1.20%	31.99%	0.00%	0.03%	265
10				RATIOS	0.4834	0.6871	0.4432	0.4660	0.5199	
	10.5			CONTRIB	9.77%	71.20%	12.65%	1.03%	5.35%	3,279
		11.0	8	CONTRIB	8.70%	76.13%	9.51%	0.89%	4.77%	2,877
11				RATIOS	0.3194	0.3680	0.4710	0.5674	0.4315	
	8.8			CONTRIB	1.48%	18.15%	64.08%	11.22%	5.07%	3,280
		11.0	2	CONTRIB	0.01%	14.75%	67.64%	13.46%	4.14%	692
12				RATIOS	0.6608	0.9787	0.7080	0.3550	0.6756	
	15.5			CONTRIB	6.54%	68.15%	22.61%	0.00%	2.70%	3,280
		11.0	25	CONTRIB	10.28%	40.80%	43.56%	0.04%	5.33%	8,408
13				RATIOS	0.5735	0.6966	0.4738	0.7380	0.6205	
	11.8			CONTRIB	13.31%	61.28%	7.87%	10.04%	7.50%	3,279
		11.0	12	CONTRIB	15.44%	54.06%	11.78%	10.37%	8.35%	4,135
14				RATIOS	0.5600	0.9315	0.6160	0.7340	0.7104	
	14.2			CONTRIB	4.01%	71.75%	15.60%	2.88%	5.76%	3,280
		11.0	22	CONTRIB	7.65%	44.47%	35.35%	5.59%	6.94%	7,523

Location	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
15				RATIOS	0.4423	0.8506	0.7648	0.7278	0.6964	
	15.4			CONTRIB	0.00%	55.85%	39.29%	1.58%	3.27%	3,280
		11.0	25	CONTRIB	1.80%	35.55%	51.97%	4.84%	5.84%	8,416
16				RATIOS	0.4592	0.8640	0.8188	0.7008	0.7107	
	16.2			CONTRIB	0.00%	52.87%	43.53%	0.88%	2.72%	3,280
		11.0	28	CONTRIB	2.03%	33.12%	55.35%	3.84%	5.65%	9,244
17				RATIOS	0.1797	0.2466	0.3648	0.7082	0.3748	
	7.3			CONTRIB	0.00%	3.34%	40.44%	49.61%	6.61%	3,279
		11.0	1	CONTRIB	0.00%	0.00%	10.25%	88.63%	1.12%	417
18				RATIOS	0.3645	0.3292	0.4096	0.7904	0.4734	
	8.5			CONTRIB	6.48%	10.50%	30.94%	42.08%	10.00%	3,279
		11.0	2	CONTRIB	2.18%	2.49%	16.17%	68.98%	10.18%	797
19				RATIOS	0.3617	0.4978	0.3364	0.6850	0.4702	
	8.8			CONTRIB	5.35%	58.13%	5.25%	22.75%	8.52%	3,279
		11.0	3	CONTRIB	1.24%	67.11%	0.01%	25.54%	6.10%	1,281
20				RATIOS	0.3707	0.5444	0.4670	0.4130	0.4488	
	9.6			CONTRIB	3.14%	58.01%	34.05%	0.86%	3.94%	3,280
		11.0	5	CONTRIB	1.17%	71.15%	24.41%	0.65%	2.63%	1,809
21				RATIOS	0.4524	0.5584	0.5540	0.4254	0.4976	
	10.9			CONTRIB	5.47%	45.46%	45.22%	0.45%	3.40%	3,279
		11.0	9	CONTRIB	5.47%	45.83%	44.85%	0.45%	3.41%	3,150
22				RATIOS	0.5115	0.9348	0.5330	0.4986	0.6195	
	13.0			CONTRIB	3.81%	81.81%	9.65%	0.40%	4.33%	3,279
		11.0	15	CONTRIB	6.68%	64.88%	21.02%	0.76%	6.66%	5,166
23				RATIOS	0.4254	0.3101	0.4346	0.3532	0.3808	
	14.6			CONTRIB	86.93%	0.00%	13.07%	0.00%	0.00%	0
		11.0	1	CONTRIB	30.22%	1.64%	65.60%	0.89%	1.65%	346
24				RATIOS	0.1944	0.3135	0.4654	0.3222	0.3239	
	8.1			CONTRIB	0.00%	11.29%	86.98%	0.53%	1.19%	3,279
		11.0	1	CONTRIB	0.00%	1.62%	98.35%	0.03%	0.00%	438
25				RATIOS	0.4101	0.4938	0.2994	0.2704	0.3684	
	7.7			CONTRIB	20.29%	69.24%	5.84%	0.20%	4.44%	3,279
		11.0	2	CONTRIB	7.59%	91.99%	0.00%	0.00%	0.41%	901
26				RATIOS	0.2355	0.2921	0.2290	0.6828	0.3599	
	6.4			CONTRIB	1.90%	27.90%	2.82%	56.77%	10.60%	3,279
		11.0	0	CONTRIB	0.00%	0.49%	0.00%	98.91%	0.59%	327
27				RATIOS	0.2637	0.3742	0.2972	0.7616	0.4242	
	7.8			CONTRIB	0.68%	34.27%	4.95%	50.85%	9.25%	3,279
		11.0	1	CONTRIB	0.00%	18.94%	0.00%	77.37%	3.69%	621

WIND-TUNNEL TEST RESULTS

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SAN FRANC... CALIFORNIA
FED. COURT-OPTION D TEST DATE: 5/24/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 10.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	0.6670	0.5174	0.9236	0.4642	0.6431	
	15.8			CONTRIB	6.14%	2.63%	89.79%	0.01%	1.43%	3,280
		11.0	27	CONTRIB	9.73%	11.29%	74.46%	0.27%	4.25%	9,066
2				RATIOS	0.5583	0.4680	0.4376	0.5414	0.5013	
	9.5			CONTRIB	25.10%	38.30%	23.33%	5.53%	7.73%	3,279
		11.0	4	CONTRIB	34.53%	39.71%	14.79%	4.14%	6.83%	1,639
3				RATIOS	0.3685	0.5213	0.7898	0.5892	0.5672	
	13.6			CONTRIB	0.00%	9.73%	87.54%	0.88%	1.85%	3,279
		11.0	18	CONTRIB	0.32%	17.27%	76.80%	1.96%	3.65%	6,132
4				RATIOS	0.4400	0.7236	0.9074	0.7254	0.6991	
	16.6			CONTRIB	0.00%	22.06%	74.83%	0.94%	2.16%	3,280
		11.0	30	CONTRIB	1.49%	23.89%	65.53%	4.07%	5.03%	9,891
5				RATIOS	0.7008	0.5691	0.6742	0.5822	0.6316	
	13.0			CONTRIB	20.73%	22.18%	51.22%	1.09%	4.78%	3,279
		11.0	19	CONTRIB	15.55%	24.96%	51.94%	1.76%	5.79%	6,300
6				RATIOS	0.5938	0.6848	0.3652	0.6312	0.5688	
	11.1			CONTRIB	20.67%	65.85%	1.23%	5.57%	6.68%	3,279
		11.0	10	CONTRIB	20.65%	65.49%	1.30%	5.74%	6.83%	3,329
7				RATIOS	0.4930	0.8489	0.6838	0.3530	0.5947	
	14.1			CONTRIB	0.99%	63.35%	33.44%	0.00%	2.22%	3,280
		11.0	21	CONTRIB	4.03%	43.00%	48.72%	0.04%	4.20%	6,939
8				RATIOS	0.5561	0.6747	0.6714	0.4364	0.5846	
	13.2			CONTRIB	5.98%	45.22%	45.79%	0.12%	2.89%	3,279
		11.0	18	CONTRIB	8.91%	34.35%	52.20%	0.27%	4.27%	6,210
9				RATIOS	0.5099	1.0421	0.7804	0.8280	0.7901	
	16.6			CONTRIB	0.10%	66.99%	26.40%	2.22%	4.28%	3,280
		11.0	29	CONTRIB	3.44%	36.01%	46.59%	6.62%	7.34%	9,835
10				RATIOS	0.4225	1.0258	0.9028	0.5590	0.7275	
	18.1			CONTRIB	0.00%	58.05%	40.66%	0.07%	1.22%	3,280
		11.0	32	CONTRIB	0.91%	32.95%	60.09%	0.79%	5.27%	10,661
11				RATIOS	0.3065	0.3758	0.5956	0.3724	0.4126	
	10.1			CONTRIB	0.05%	7.54%	90.69%	0.30%	1.42%	3,279
		11.0	7	CONTRIB	0.00%	4.98%	94.17%	0.20%	0.65%	2,456
12				RATIOS	0.4693	0.7635	0.4994	0.4744	0.5516	
	11.5			CONTRIB	5.13%	73.44%	16.11%	0.67%	4.65%	3,279
		11.0	11	CONTRIB	5.75%	69.36%	18.92%	0.78%	5.20%	3,684
13				RATIOS	0.6732	0.7281	0.4432	0.5896	0.6085	
	11.9			CONTRIB	23.05%	64.57%	3.84%	2.13%	6.42%	3,279
		11.0	12	CONTRIB	22.46%	59.56%	6.84%	3.01%	8.13%	4,003
14				RATIOS	0.3268	1.0185	1.1320	1.2224	0.9249	
	21.4			CONTRIB	0.00%	32.61%	59.32%	5.57%	2.50%	3,280
		11.0	44	CONTRIB	0.00%	23.80%	55.04%	13.21%	7.94%	14,705

Ma- on	10.0% Ground Speed	Exc. Speed Exc.	% Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
				RATIOS	0.3256	0.6539	1.1416	1.0300	0.7878	
	19.3			CONTRIB	0.00%	3.42%	91.61%	3.53%	1.43%	3,280
		11.0	37	CONTRIB	0.00%	16.52%	66.01%	11.66%	5.80%	12,333
				RATIOS	0.2575	0.5702	0.4932	1.1062	0.6068	
	11.7			CONTRIB	0.00%	35.98%	12.37%	44.77%	6.89%	3,280
		11.0	13	CONTRIB	0.00%	37.12%	14.98%	40.35%	7.55%	4,274
				RATIOS	0.7166	0.8719	0.3686	1.1594	0.7791	
	15.1			CONTRIB	11.92%	59.70%	0.00%	21.47%	6.91%	3,280
		11.0	20	CONTRIB	15.35%	46.36%	0.70%	27.25%	10.34%	6,694
				RATIOS	0.4417	1.0056	0.7808	0.7616	0.7474	
	16.4			CONTRIB	0.00%	65.25%	29.87%	1.43%	3.46%	3,280
		11.0	28	CONTRIB	1.62%	37.37%	49.29%	5.17%	6.55%	9,306
				RATIOS	0.3425	0.7202	0.7202	0.6606	0.6109	
	14.0			CONTRIB	0.00%	46.47%	49.33%	1.55%	2.65%	3,280
		11.0	20	CONTRIB	0.12%	34.75%	56.40%	3.84%	4.88%	6,753
				RATIOS	0.5792	0.9753	0.5292	0.5584	0.6605	
	13.6			CONTRIB	6.45%	81.92%	6.07%	0.64%	4.92%	3,279
		11.0	17	CONTRIB	11.61%	61.02%	18.43%	1.49%	7.45%	5,612
				RATIOS	0.6580	0.8556	0.4168	0.5686	0.6248	
	12.8			CONTRIB	18.95%	74.17%	0.67%	1.08%	5.12%	3,279
		11.0	13	CONTRIB	19.14%	67.46%	3.40%	2.11%	7.88%	4,474
				RATIOS	0.6890	0.6590	0.6696	0.6725	0.6725	
	13.5			CONTRIB	17.57%	36.49%	38.19%	2.21%	5.55%	3,279
		11.0	21	CONTRIB	13.57%	29.60%	46.27%	4.21%	6.34%	6,962
				RATIOS	0.4361	0.3174	0.3820	0.4228	0.3896	
	7.5			CONTRIB	24.30%	18.93%	44.88%	4.99%	6.90%	3,280
		11.0	0	CONTRIB	59.07%	3.91%	28.04%	5.75%	3.24%	236
				RATIOS	0.2693	0.2528	0.3870	0.4382	0.3368	
	11.9			CONTRIB	0.00%	0.00%	61.87%	38.13%	0.00%	27
		11.0	0	CONTRIB	0.00%	0.00%	81.39%	18.58%	0.03%	92
				RATIOS	0.7645	0.9124	0.4304	0.4626	0.6425	
	13.7			CONTRIB	22.49%	73.33%	0.03%	0.14%	4.00%	3,279
		11.0	15	CONTRIB	23.11%	64.83%	4.05%	0.48%	7.52%	5,106
				RATIOS	0.2400	0.3146	0.5708	0.8064	0.4829	
	10.5			CONTRIB	0.00%	0.66%	74.07%	21.61%	3.66%	3,279
		11.0	7	CONTRIB	0.00%	0.32%	71.50%	24.43%	3.75%	2,421
				RATIOS	0.3228	0.5618	0.8062	0.7918	0.6207	
	14.4			CONTRIB	0.00%	11.76%	81.31%	4.41%	2.52%	3,280
		11.0	22	CONTRIB	0.00%	20.26%	67.45%	7.56%	4.72%	7,321

SF
SAN FRANCISCO, CALIFORNIA
FED. COURT-EXISTING TEST DATE: 9/24/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 0.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	0.6596	0.5491	0.9544	0.3724	0.6339	
	38.1			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
2				RATIOS	0.5610	0.5371	0.4518	0.4764	0.5066	
	23.7			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
3				RATIOS	0.3744	0.5966	0.8000	0.5842	0.5888	
	25.1			CONTRIB	0.00%	0.15%	99.85%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
4				RATIOS	0.4507	0.7834	0.9374	0.5618	0.6833	
	30.1			CONTRIB	0.00%	67.74%	32.26%	0.00%	0.00%	2
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
5				RATIOS	0.5955	0.5051	0.7538	0.4214	0.5690	
	30.3			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.5755	0.5731	0.3960	0.6202	0.5412	
	23.6			CONTRIB	0.00%	99.28%	0.00%	0.72%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
7				RATIOS	0.4958	0.8851	0.5674	0.5016	0.6125	
	32.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
8				RATIOS	0.5304	0.6080	0.4912	0.5720	0.5504	
	22.0			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
9				RATIOS	0.4802	0.9406	0.7870	0.8388	0.7616	
	33.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	1
10				RATIOS	0.5114	0.9223	0.7612	0.7000	0.7237	
	33.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
11				RATIOS	0.2635	0.1771	0.3476	0.7904	0.3947	
	24.2			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
12				RATIOS	0.5944	1.0326	0.7104	0.4540	0.6978	
	37.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	8
13				RATIOS	0.6189	0.6343	0.5616	0.7366	0.6379	
	23.8			CONTRIB	0.00%	43.19%	0.00%	56.80%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
14				RATIOS	0.5660	0.8606	0.6670	0.8230	0.7291	
	31.0			CONTRIB	0.00%	99.99%	0.00%	0.01%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0

WIND-TUNNEL TEST RESULTS

SF
SAN FRANCISCO, CALIFORNIA
FED. COURT-EXISTING TEST DATE: 5/24/94

Loca-tion	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
15				RATIOS	0.5192	0.8811	0.7318	0.6748	0.7017	
	32.1			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
16				RATIOS	0.6652	0.8423	0.7758	0.8466	0.7825	
	30.6			CONTRIB	0.00%	99.90%	0.00%	0.10%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
17				RATIOS	0.6496	0.8771	0.7668	0.8550	0.7871	
	31.6			CONTRIB	0.00%	99.98%	0.00%	0.02%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
18				RATIOS	0.4240	1.0051	0.9030	0.7780	0.7775	
	36.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	5
19				RATIOS	0.3939	0.6800	0.7188	0.7168	0.6274	
	29.8			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
				RATIOS	0.5343	1.0806	0.7126	0.7708	0.7746	
	19.0			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	21
21				RATIOS	0.5799	0.8497	0.7612	0.6752	0.7165	
	30.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
22				RATIOS	0.2362	0.3423	0.3820	0.7180	0.4196	
	22.2			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
23				RATIOS	0.4128	0.3194	0.4540	0.5012	0.4219	
	15.2			CONTRIB	0.03%	0.00%	0.65%	99.32%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
24				RATIOS	0.2178	0.2971	0.3966	0.5186	0.3575	
	15.7			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
25				RATIOS	0.5181	0.7960	0.7374	0.6512	0.6757	
	28.8			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
26				RATIOS	0.2240	0.3309	0.4754	0.7866	0.4542	
	24.2			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
27				RATIOS	0.2992	0.6000	0.8716	0.9034	0.6685	
	27.9			CONTRIB	0.00%	0.00%	16.58%	83.42%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0

OF
SAN FRANCISCO, CALIFORNIA
FED. COURT-OPTION C TEST DATE: 5/24/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 0.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	0.6732	0.5213	0.9022	0.4096	0.6266	
	29.8			CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
2				RATIOS	0.5887	0.5337	0.4426	0.3960	0.4903	
	19.6			CONTRIB	23.34%	76.66%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
3				RATIOS	0.3656	0.5022	0.7728	0.5764	0.5543	
	52.0			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
4				RATIOS	0.4011	0.6174	0.9268	0.7184	0.6659	
	29.0			CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
5				RATIOS	0.6039	0.5275	0.7086	0.5498	0.5975	
	22.2			CONTRIB	0.03%	0.13%	99.84%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.4744	0.8680	0.8694	0.4772	0.6722	
	31.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
7				RATIOS	0.6851	0.9680	0.6614	0.2282	0.6357	
	34.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	2
8				RATIOS	0.4118	0.5225	0.5238	0.2164	0.4186	
	18.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
9				RATIOS	0.4546	0.3017	0.3920	0.2192	0.3419	
	23.7			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
10				RATIOS	0.4834	0.6871	0.4432	0.4660	0.5199	
	24.7			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
11				RATIOS	0.3194	0.3680	0.4710	0.5674	0.4315	
	17.4			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
12				RATIOS	0.6608	0.9787	0.7080	0.3550	0.6756	
	35.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
13				RATIOS	0.5735	0.6966	0.4738	0.7380	0.6205	
	25.1			CONTRIB	0.00%	95.91%	0.00%	4.09%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
14				RATIOS	0.5600	0.9315	0.6160	0.7340	0.7104	
	33.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	1

WIND-TUNNEL TEST RESULTS

SF
SAN FRANCISCO, CALIFORNIA
FED. COURT-OPTION C TEST DATE: 5/24/94

Loca-tion	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
5				RATIOS	0.4423	0.8506	0.7648	0.7278	0.6964	
	31.0			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.4592	0.8640	0.8188	0.7008	0.7107	
	31.1			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
7				RATIOS	0.1797	0.2466	0.3648	0.7082	0.3748	
	21.7			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
8				RATIOS	0.3645	0.3292	0.4096	0.7904	0.4734	
	24.2			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
9				RATIOS	0.3617	0.4978	0.3364	0.6850	0.4702	
	21.1			CONTRIB	0.00%	0.08%	0.00%	99.92%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
10				RATIOS	0.3707	0.5444	0.4670	0.4130	0.4488	
	21.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
11				RATIOS	0.4524	0.5584	0.5540	0.4254	0.4976	
	24.0			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
12				RATIOS	0.5115	0.9348	0.5330	0.4986	0.6195	
	33.7			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	1
13				RATIOS	0.4254	0.3101	0.4346	0.3532	0.3808	
	27.2			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
14				RATIOS	0.1944	0.3135	0.4654	0.3222	0.3239	
	21.4			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
15				RATIOS	0.4101	0.4938	0.2994	0.2704	0.3684	
	17.8			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
16				RATIOS	0.2355	0.2921	0.2290	0.6828	0.3599	
	20.9			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
17				RATIOS	0.2637	0.3742	0.2972	0.7616	0.4242	
	23.6			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0

SF
SAN FRANCISCO, CALIFORNIA
FED. COURT-OPTION D TEST DATE: 5/24/94

The ratios of pedestrian-level wind speeds to the 122-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 0.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	0.6670	0.5174	0.9236	0.4642	0.6431	
	28.9			CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
2				RATIOS	0.5583	0.4680	0.4376	0.5414	0.5013	
	19.7			CONTRIB	70.55%	19.76%	0.00%	9.69%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
3				RATIOS	0.3685	0.5213	0.7898	0.5892	0.5672	
	49.3			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
4				RATIOS	0.4400	0.7236	0.9074	0.7254	0.6991	
	30.5			CONTRIB	0.00%	20.92%	79.08%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
5				RATIOS	0.7008	0.5691	0.6742	0.5822	0.6316	
	48.1			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.5938	0.6848	0.3652	0.6312	0.5688	
	24.8			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
7				RATIOS	0.4930	0.8489	0.6838	0.3530	0.5947	
	30.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
8				RATIOS	0.5561	0.6747	0.6714	0.4364	0.5846	
	24.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
9				RATIOS	0.5099	1.0421	0.7804	0.8280	0.7901	
	37.7			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	10
10				RATIOS	0.4225	1.0258	0.9028	0.5590	0.7275	
	37.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	7
11				RATIOS	0.3065	0.3758	0.5956	0.3724	0.4126	
	28.4			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
12				RATIOS	0.4693	0.7635	0.4994	0.4744	0.5516	
	27.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
13				RATIOS	0.6732	0.7281	0.4432	0.5896	0.6085	
	26.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
14				RATIOS	0.3268	1.0185	1.1320	1.2224	0.9249	
	39.2			CONTRIB	0.00%	30.15%	0.05%	69.80%	0.00%	3
		36.0	0	CONTRIB	0.00%	49.92%	9.17%	40.91%	0.00%	12

a- on	0.01142% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
				RATIOS	0.3256	0.6539	1.1416	1.0300	0.7878	
	35.6			CONTRIB	0.00%	0.00%	98.73%	1.27%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	98.61%	1.39%	0.00%	2
				RATIOS	0.2575	0.5702	0.4932	1.1062	0.6068	
	34.0			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	2
				RATIOS	0.7166	0.8719	0.3686	1.1594	0.7791	
	35.6			CONTRIB	0.00%	0.82%	0.00%	99.18%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.47%	0.00%	99.53%	0.00%	3
				RATIOS	0.4417	1.0056	0.7808	0.7616	0.7474	
	36.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	5
				RATIOS	0.3425	0.7202	0.7202	0.6606	0.6109	
	25.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
				RATIOS	0.5792	0.9753	0.5292	0.5584	0.6605	
	35.1			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	2
				RATIOS	0.6580	0.8556	0.4168	0.5686	0.6248	
	31.1			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
				RATIOS	0.6890	0.6590	0.6696	0.6725	0.6725	
	27.8			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
				RATIOS	0.4361	0.3174	0.3820	0.4228	0.3896	
	15.6			CONTRIB	87.36%	0.00%	0.00%	12.64%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
				RATIOS	0.2693	0.2528	0.3870	0.4382	0.3368	
	13.2			CONTRIB	0.00%	0.00%	0.13%	99.87%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
				RATIOS	0.7645	0.9124	0.4304	0.4626	0.6425	
	32.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
				RATIOS	0.2400	0.3146	0.5708	0.8064	0.4829	
	24.6			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
				RATIOS	0.3228	0.5618	0.8062	0.7918	0.6207	
	32.7			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0

APPENDIX D: LETTER OF JULY 11TH

B. R. White
3207 Shelter Cove
Davis, CA 95616
(916) 758-1496

July 11, 1994

Mr. Chris WM. Clark, J.D.
Fugro-McClelland
1012 Pacific Street, Suite A
San Luis Obispo, California 93401

RE: Additional Wind-tunnel Testing of Tenth and Market Street GSA Site.

Dear Chris:

Pursuant to our previous conversations, ten different building configurations were wind-tunnel tested to explore a range of building sizes and shapes with various set backs from Market, Tenth, and Mission Streets in an effort to predict a particular massing configuration that might result in an equivalent or improved wind environment when and if the candidate massing configuration were completely tested in a full wind-tunnel study.

The present wind-tunnel tests are to be viewed as partial or limited as not all wind conditions were examined. The current method of approach was to test the "worst" wind direction with respect to the violation of hazard (safety) criterion which was the west-northwesterly wind direction. Eighteen of the twenty hazard violations previously wind-tunnel measured primarily were caused by this wind due to its frequency and magnitude. To determine a complete "picture" or description of the wind environment associated with each individual configuration would require complete wind-tunnel testing of all cases which was beyond the scope of the present work task. Consequently, the limited testing approach was used to rule out those cases that would produce a substantial worsening of the wind environment. This approach will identify unsuitable configurations and also will identify potential configurations that might leave the wind environment unaltered or improved. However, this method, unfortunately, will not indicate the final resultant wind environment without further wind-tunnel testing of all locations for all wind directions. This would be Phase II of the work statement if it is warranted.

The limited testing was carried out for the west-northwesterly wind direction for each of the ten settings for points that previously were hazard violations as well as other obvious locations of Market, Tenth, and Mission Streets adjacent to the project site. The locations were # 1, 2, 5, 7-15, 18-20, 25, 26, 30, 31, and 33 (total of 20 locations). These locations approximately represent the majority of surface locations measured along Market, Tenth, and Mission Streets by the site.

The ten configurations tested were:

i) Configuration Setting 1: Option A from Kaplan-McLaughlin Diaz (KMD) dated June 21, 1994.

ii) Configuration Setting 2: Option B from KMD dated June 21, 1994.

iii) Configuration Setting 3: Option C from KMD dated June 21, 1994.

iv) Configuration Setting 4: Option D from KMD dated June 21, 1994.

v) Configuration Setting 5: The site with no buildings or structures located on it.

vi) Configuration Setting 6: Option X, this is a building similar to the 100 1st Street structure plus adding lower-level massing located to the South fronting Mission Street.

vii) Configuration Setting 7: This is Option A "reversed" such that the Market Street frontage becomes the Mission Street fronting (a 180 degree rotation of the setting and Mission frontage becomes the Market Street frontage).

viii) Configuration Setting 8: This is Option C "reversed" in the same manner describe above in item vii).

ix) Configuration Setting 9: This is Option Y. It has large-tall massing similar to the Bank of America building adjacent to the site plus lower-level massing frontage Mission Street.

x) Configuration Setting 10: This is Option Z. This is representative of a 24,000 square-foot rectangular foot print with a 315 feet height fronting Mission Street.

All 10 configurations tested were on the order of 700,000 assignable square feet as required by GSA except item v) that was the bare or empty lot which was tested for extreme limit comparisons.

The wind-tunnel data acquired were input to the San Francisco Wind Ordinance Computer Code for estimated calculations of the proposed wind environment for each setting tested. The computer results simply represent estimates since only the most critical west-northwesterly wind direction was tested. To build a complete set of input data for the computer code first the existing (previously tested) results were used for all wind directions except west-northwest, in which case the present data was used. Next, a similar calculation scheme was used and the previous project results were used in place of the existing setting results. Neither case (using the existing or project data) is valid; however, its use is justified to: i) complete the input data file; ii) bracket the wind environment from existing conditions to a particular setting. It is felt the output should be somewhat indicative of the actual wind environment if it were to be fully tested. Clearly, negative or worsening-case findings are accurately determined in most cases. However, favorable or improved results may not be borne out to be true when the complete wind-tunnel test is conducted as previous low-wind locations for the other-than-tested case sometimes increase causing a hazard-criterion violation (i.e., the possibility may arise that the hazard criterion is still violated; however, it is now due to a different wind direction than the previous case).

Summary of Results.

The analysis of the computer results indicate that 9 of the 10 cases tested result in a worsening of the existing wind environment (this even includes the empty lot setting). The single case that may leave the existing wind environment similar or may slightly improve it was case iii), the Option C from KMD. This was true of the computer results for both usage of existing or project wind-tunnel data for the untested wind directions. Tables 1 and 2 present the summary results of the testing.

Therefore, it is recommended that only Option C of KMD be tested in Phase II of this approach. Note, these findings do not guarantee that Option C will improve the existing wind environment; however, the findings indicate that Option C has the potential to do so. Also, of the other cases tested (the other nine), all would dramatically worsen the existing wind environment (this finding has a very high-level of accuracy or confidence due to the nature of the wind program structure). Only Option C of KMD has the potential of leaving the existing wind environment unaltered or slightly improved.

Sincerely yours,

Bruce R. White, Ph.D.

SF Federal Bldg. New2 Existing Setting 7/8/94					SF Federal Bldg. Set 1(Option A) with Existing data					SF Federal Bldg. Set 2(Option B) with Existing data					SF Federal Bldg. Set 3(Option C) with Existing data				
#	Crit.	Speed	HAZ	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess
1	36	47.20	X	0.6946	1	56.71	X	+	2.2662	1	55.36	X	+	2.0247	1	46.65	X		0.6199
2	36	39.18	X	0.0206	2	39.03	X		0.0206	2	38.95	X		0.0206	2	39.09	X		0.0206
5	36	30.85		0.0000	5	54.44		+	0.0000	5	47.06		+	0.0000	5	45.57		+	0.0000
7	36	41.21		0.0000	7	28.64		-	0.0000	7	27.77		-	0.0000	7	29.62		-	0.0000
8	36	57.72	X	2.3888	8	49.49	X	-	0.9705	8	57.99	X		2.4644	8	51.70	X	-	1.3742
9	36	51.48	X	1.2717	9	46.84	X	-	0.5567	9	46.65	X	-	0.5457	9	36.65	X	-	0.0171
10	36	41.33	X	0.1843	10	40.81	X		0.0935	10	40.90	X		0.0929	10	41.02	X		0.1541
11	36	40.46	X	0.0411	11	37.63	X	-	0.0307	11	36.68	X	-	0.0271	11	37.45	X	-	0.0440
12	36	30.92		0.0000	12	29.44		-	0.0000	12	32.04		+	0.0002	12	29.33		-	0.0000
13	36	44.23	X	0.3575	13	36.65	X	-	0.0172	13	40.31	X	-	0.1286	13	36.56	X	-	0.0164
14	36	31.62		0.0000	14	29.94		-	0.0000	14	31.02			0.0000	14	29.11		-	0.0000
15	36	31.81		0.0001	15	23.26		-	0.0000	15	35.64		+	0.0100	15	23.75		-	0.0000
18	36	31.28		0.0000	18	26.47		-	0.0000	18	27.89		-	0.0000	18	22.32		-	0.0000
19	36	38.42	X	0.0478	19	26.54		-	0.0000	19	29.58		-	0.0000	19	26.86		-	0.0000
20	36	39.25	X	0.2090	20	43.36	X	+	0.2090	20	39.28	X		0.2090	20	56.84	X	+	0.2090
25	36	38.66	X	0.0545	25	36.45	X	-	0.0145	25	38.02	X		0.0383	25	33.63		-	0.0016
26	36	49.75	X	2.2606	26	48.05	X	-	1.8401	26	48.00	X	-	1.8395	26	47.76	X	-	1.5767
30	36	48.11	X	0.7259	30	46.87	X	-	0.5800	30	47.35	X		0.6326	30	43.81	X	-	0.3194
31	36	41.40	X	0.2460	31	40.97	X		0.1042	31	40.88	X		0.1072	31	40.91	X		0.0946
33	36	47.37	X	0.6098	33	47.50	X		0.6805	33	45.83	X	-	0.4625	33	40.37	X	-	0.1291

TABLE 1

Original

SF Federal Bldg. Set 4(Option D) with Existing data					SF Federal Bldg. Set 5(Empty) with Existing data					SF Federal Bldg. Set 6(Option X) with Existing data					SF Federal Bldg. Set 7(A Rev) with Existing data				
#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess
1	56.89	X	+	2.2941	1	42.67	X	-	0.3344	1	49.96	X	+	1.0302	1	48.06	X		0.7713
2	39.07	X		0.0206	2	39.06	X		0.0206	2	39.12	X		0.0206	2	38.93	X		0.0206
5	30.82			0.0000	5	34.57		+	0.0000	5	32.35		+	0.0000	5	30.81			0.0000
7	27.90		-	0.0000	7	38.85	X	-	0.0578	7	28.57		-	0.0000	7	27.73		-	0.0000
8	51.93	X	-	1.4146	8	57.05	X		2.2931	8	52.72	X	-	1.5443	8	52.22	X	-	1.4612
9	48.21	X	-	0.7382	9	36.31	X	-	0.0125	9	45.96	X	-	0.4896	9	38.81	X	-	0.0560
10	40.86	X		0.0929	10	57.54	X	+	2.4143	10	49.6	X	+	1.0191	10	52.88	X	+	1.6940
11	36.78	X	-	0.0269	11	51.20	X	+	1.2458	11	38.13	X	-	0.0581	11	37.45	X	-	0.0446
12	39.43		+	0.0000	12	44.38	X	+	0.3620	12	31.62			0.0001	12	33.27		+	0.0009
13	42.05	X	-	0.2322	13	42.25	X	-	0.2419	13	39.57	X	-	0.0880	13	37.77	X	-	0.0292
14	32.28			0.0000	14	39.71	X	+	0.0894	14	30.75			0.0000	14	29.04		-	0.0000
15	23.26		-	0.0000	15	34.11		+	0.0033	15	25.7		-	0.0000	15	23.24		-	0.0000
18	22.24		-	0.0000	18	33.63		+	0.0017	18	23.45		-	0.0000	18	22.31		-	0.0000
19	32.35		-	0.0003	19	34.96		-	0.0068	19	26.88		-	0.0000	19	30.51		-	0.0000
20	41.29	X	+	0.2090	20	39.28	X		0.2090	20	59.24	X	+	0.2090	20	46.54	X	+	0.2090
25	41.16	X	+	0.1881	25	36.17	X	-	0.0127	25	35.14		-	0.0074	25	33.95		-	0.0030
26	48.42	X	-	2.0097	26	47.96	X	-	1.7853	26	52.38	X	+	1.3462	26	59.85	X	+	1.4941
30	46.23	X	-	0.5145	30	45.78	X	-	0.4727	30	40.88	X	-	0.1534	30	41.14	X	-	0.1721
31	43.69	X	+	0.1579	31	40.94	X		0.0995	31	40.84	X		0.0943	31	40.85	X		0.0943
33	46.39	X		0.5201	33	41.35	X	-	0.1998	33	40.7	X	-	0.1534	33	39.82	X	-	0.0880

SF Federal Bldg. Set 8(C rev) with Existing data					SF Federal Bldg. Set 9(Option Y) with Existing dat					SF Federal Bldg. Set 10(Option Z) with Existing data				
#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess
1	44.71	X	-	0.4578	1	55.99	X	+	2.1415	1	51.99	X	+	1.4236
2	39.10	X		0.0206	2	39.17	X		0.0206	2	39.07	X		0.02061
5	47.06		+	0.0000	5	33.59		+	0.0000	5	42.20		+	0.00000
7	34.18		-	0.0000	7	48.38		+	0.0000	7	37.63	X	-	0.02553
8	59.75	X	+	2.7678	8	55.92	X	-	2.0678	8	62.11	X	+	3.28163
9	44.94	X	-	0.4045	9	45.72	X	-	0.4526	9	41.85	X	-	0.2169
10	60.50	X	+	3.0196	10	48.50	X	+	0.8483	10	58.08	X	+	2.51634
11	44.60	X	+	0.4064	11	45.16	X	+	0.4502	11	51.24	X	+	1.25326
12	39.22	X	+	0.0707	12	42.59	X	+	0.2476	12	36.11	X	+	0.01325
13	43.62	X		0.3176	13	46.62	X	+	0.5349	13	42.11	X	-	0.2349
14	45.74		+	0.0000	14	32.34			0.0002	14	42.65	X	+	0.25016
15	26.35		-	0.0000	15	31.87			0.0001	15	23.36		-	0
18	23.39		-	0.0000	18	28.58		-	0.0000	18	22.33		-	0
19	35.93		-	0.0112	19	27.05		-	0.0000	19	37.44	X		0.02757
20	39.32	X		0.2090	20	39.98	X		0.2090	20	69.43	X	+	0.20898
25	37.49	X	-	0.0284	25	36.15	X	-	0.0125	25	41.77	X	+	0.21594
26	47.84	X	-	1.5802	26	66.56	X	+	1.8805	26	48.66	X	-	2.08364
30	47.39	X		0.6376	30	46.67	X	-	0.5589	30	45.21	X	-	0.42387
31	40.96	X		0.1081	31	40.88	X		0.1075	31	40.86	X		0.09428
33	46.67	X		0.5299	33	47.32	X		0.6277	33	45.22	X	-	0.42387

SF Federal Bldg. New2 7/8/94 Project 1 Setting					SF Federal Bldg. Set 1(Option A) with Project data					SF Federal Bldg. Set 2(Option B) with Project data					SF Federal Bldg. Set 3(Option C) with Project data				
#	Crit.	Speed	HAZ	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess
1	36	51.49	X	2.3922	1	50.68	X		2.2305	1	49.40	X	-	1.9923	1	41.63	X	-	0.5925
2	36	38.11	X	0.0185	2	34.12	X	-	0.0185	2	54.10	X	+	0.0185	2	50.45	X	+	0.0185
5	36	25.23		0.0000	5	25.21			0.0000	5	25.20			0.0000	5	25.23			0.0000
7	36	31.20		0.0000	7	28.14		-	0.0000	7	53.80		+	0.0000	7	26.36		-	0.0000
8	36	50.21	X	2.1762	8	44.35	X	-	1.0127	8	51.90	X	+	2.5066	8	46.12	X	-	1.3770
9	36	46.02	X	1.2701	9	41.78	X	-	0.5567	9	41.68	X	-	0.5457	9	32.90	X	-	0.0171
10	36	35.16	X	0.0853	10	35.05	X		0.0819	10	34.99	X		0.0813	10	36.51	X	+	0.1426
11	36	31.46		0.0035	11	31.69			0.0045	11	30.77			0.0009	11	33.43	X	+	0.0178
12	36	27.44		0.0000	12	26.60			0.0000	12	29.24		+	0.0002	12	26.23		-	0.0000
13	36	37.62	X	0.2257	13	32.88	X	-	0.0172	13	36.19	X	-	0.1286	13	32.84	X	-	0.0164
14	36	30.93		0.0047	14	27.19		-	0.0000	14	30.36			0.0000	14	23.89		-	0.0000
15	36	28.45		0.0001	15	20.40		-	0.0000	15	32.05		+	0.0100	15	21.12		-	0.0000
18	36	26.25		0.0000	18	21.32		-	0.0000	18	39.63		+	0.0000	18	18.84		-	0.0000
19	36	30.29		0.0030	19	27.22		-	0.0000	19	26.57		-	0.0000	19	49.59		+	0.0000
20	36	75.69	X	0.2077	20	38.10	X	-	0.2077	20	62.53	X	-	0.2077	20	38.09	X	-	0.2077
25	36	35.73	X	0.0965	25	32.61	X	-	0.0145	25	34.19	X	-	0.0383	25	29.97		-	0.0016
26	36	70.01	X	1.6400	26	52.16	X	-	1.5268	26	47.71	X	-	1.5261	26	52.04	X	-	1.2637
30	36	43.80	X	0.8681	30	41.98	X	-	0.6180	30	42.43	X	-	0.6706	30	39.17	X	-	0.3574
31	36	34.33	X	0.0638	31	34.72	X		0.0707	31	34.86	X		0.0737	31	34.24	X		0.0612
33	36	42.80	X	0.6849	33	42.78	X		0.6805	33	40.92	X	-	0.4625	33	36.23	X	-	0.1291

TABLE 2

Original

SF Federal Bldg. Set 4(Option D) with Project data					SF Federal Bldg. Set 5(Empty) with Project data					SF Federal Bldg. Set 6(Option X) with Project data					SF Federal Bldg. Set 7(A Rev) with Project data				
#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess
1	50.82	X		2.2583	1	38.51	X	-	0.3072	1	44.46	X	-	1.0024	1	42.87	X	-	0.7438
2	36.40	X	-	0.0185	2	34.27	X	-	0.0185	2	42.50	X	+	0.0185	2	41.71	X	+	0.0185
5	25.23			0.0000	5	25.32			0.0000	5	25.23			0.0000	5	25.19			0.0000
7	28.43		-	0.0000	7	34.87	X	+	0.0578	7	42.68		+	0.0000	7	27.83		-	0.0000
8	46.44	X	-	1.4569	8	51.04	X		2.3353	8	46.93	X	-	1.5866	8	46.62	X	-	1.5035
9	43.21	X	-	0.7382	9	32.42	X	-	0.0125	9	41.15	X	-	0.4896	9	34.82	X	-	0.0560
10	34.98	X		0.0813	10	51.40	X	+	2.4028	10	44.36	X	+	1.0076	10	47.33	X	+	1.6824
11	29.95		-	0.0007	11	45.80	X	+	1.2197	11	34.24	X	+	0.0320	11	33.48	X	+	0.0185
12	26.12		-	0.0000	12	39.72	X	+	0.3620	12	28.93		+	0.0001	12	39.33		+	0.0009
13	37.74	X		0.2322	13	37.93	X		0.2419	13	35.56	X	-	0.0880	13	33.72	X	-	0.0292
14	26.67		-	0.0000	14	35.57	X	+	0.0894	14	25.22		-	0.0000	14	23.87		-	0.0000
15	20.24		-	0.0000	15	30.42		+	0.0033	15	23.19		-	0.0000	15	20.13		-	0.0000
18	18.91		-	0.0000	18	30.02		+	0.0017	18	25.68			0.0000	18	18.83		-	0.0000
19	29.09		-	0.0003	19	31.49		+	0.0068	19	29.49			0.0000	19	27.29		-	0.0000
20	40.56	X	-	0.2077	20	38.10	X	-	0.2077	20	38.10	X	-	0.2077	20	38.10	X	-	0.2077
25	36.88	X	+	0.1881	25	32.40	X	-	0.0127	25	31.61		-	0.0074	25	30.27		-	0.0030
26	71.34	X	+	1.6960	26	45.10	X	-	1.4720	26	47.89	X	-	1.0333	26	45.03	X	-	1.1811
30	41.42	X	-	0.5525	30	40.99	X	-	0.5107	30	36.98	X	-	0.1914	30	37.18	X	-	0.2101
31	36.19	X	+	0.1245	31	34.48	X		0.0660	31	34.13	X		0.0608	31	34.15	X		0.0608
33	41.48	X	-	0.5201	33	37.09	X	-	0.1998	33	36.53	X	-	0.1534	33	35.57	X	-	0.0880

SF Federal Bldg. Set 8(C rev) with Existing data					SF Federal Bldg. Set 9(Option Y) with Existing dat					SF Federal Bldg. Set 10(Option Z) with Existing data				
#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess	#	Speed	HAZ	diff.	% excess
1	39.95	X	-	0.4306	1	50.03	X	-	2.1075	1	46.32	X	-	1.3950
2	40.19	X	+	0.0185	2	38.96	X		0.0185	2	32.05	X	-	0.0185
5	25.20			0.0000	5	25.23			0.0000	5	25.23			0.0000
7	45.58		+	0.0000	7	43.07		+	0.0000	7	33.50	X	+	0.0255
8	53.26	X	+	2.8100	8	49.85	X		2.1100	8	55.35	X	+	3.3238
9	40.27	X	-	0.4045	9	40.77	X	-	0.4526	9	37.41	X	-	0.2169
10	54.12	X	+	3.0081	10	43.32	X	+	0.8367	10	51.90	X	+	2.5048
11	39.94	X	+	0.3803	11	40.45	X	+	0.4240	11	45.84	X	+	1.2271
12	35.20	X	+	0.0707	12	38.03	X	+	0.2476	12	32.51	X	+	0.0133
13	38.99	X	+	0.3065	13	41.59	X	+	0.5349	13	37.80	X		0.2349
14	26.07		-	0.0000	14	28.85		-	0.0002	14	38.04	X	+	0.2502
15	23.74		-	0.0000	15	28.68			0.0001	15	20.14		-	0.0000
18	28.80		+	0.0000	18	25.73			0.0000	18	18.85		-	0.0000
19	32.26		+	0.0112	19	31.53		+	0.0000	19	33.63	X	+	0.0276
20	54.39	X	-	0.2077	20	41.74	X	-	0.2077	20	88.37	X	+	0.2077
25	33.70	X	-	0.0284	25	32.39	X	-	0.0125	25	37.40	X	+	0.2159
26	52.15	X	-	1.2672	26	95.69	X	+	1.5670	26	49.01	X	-	1.7697
30	42.45	X	-	0.6756	30	41.83	X	-	0.5969	30	40.50	X	-	0.4619
31	34.89	X		0.0747	31	34.88	X		0.0741	31	34.14	X		0.0608
33	41.54	X	-	0.5299	33	42.35	X		0.6277	33	40.50	X	-	0.4239

APPENDIX E: LETTER OF JULY 25TH

B. R. White
3207 Shelter Cove
Davis, CA 95616
(916) 758-1496

July 25, 1994

Mr. Chris W. Clark, J.D.
Fugro-McClelland, Suite A
1012 Pacific Street
San Luis Obispo, California 03401

RE: Complete Wind-Tunnel Test Results of Kaplan-McLaughlin-Diaz's Option C Configuration (June 21, 1994).

Dear Chris:

I have completed the wind-tunnel testing of KMD's Option C setting configuration. Eight additional surface measurement locations were added due to the nature of the configuration. Four locations (#34-37) were added on the project's plaza on Market and Tenth Streets; three locations were added on the Mission Street access area (#38-40); and, one additional point (#41) was added close to the existing point #1. Point #41 was selected just around the corner of the Fox Plaza tower plaza's location #1, as it is known that either side of a corner of a relatively taller building may experience strong wind speeds with intensified levels of gustiness or turbulence. This was the situation in the present case as will be discussed later.

Figure 1 presents the locations of the near surface measurement points for the current testing. Additionally, Table 1 presents the quantitative results of the wind-tunnel test. Four wind directions were tested: northwest, west-northwest, west and southwest, as specified by the Wind Ordinance of San Francisco for south of Market Street locations. The resulting wind-tunnel data was used as an input data set in the San Francisco Wind Ordinance Computer Code to generate predicted full-scale wind speeds and hours of exceedence for the hazard criterion evaluation.

The results indicate locations #1 and #41 would experience substantial increases in the number of hours exceedence as compared to the existing setting. Location #1 would increase to 73 hours per year and location #41 to 183 hours per year as compared to approximately 61 hours hazard or safety criterion exceedence per year in the existing setting. This setting would result in a substantial worsening of an existing wind safety problem on the Fox Plaza Building plaza. This particular area has a well-known existing wind-safety problem as documented by the photograph presented in Figure 2, which was taken from the San Francisco Chronicle. Note the Fox Plaza sign in the upper right corner of the photograph.

Additionally, a new violation of the hazard criterion would occur at location #36 on the project's plaza. This location would experience 24 hours per year violation

of the hazard (safety) criterion, whereas the existing setting has a building covering this location so that no relative comparison may be made.

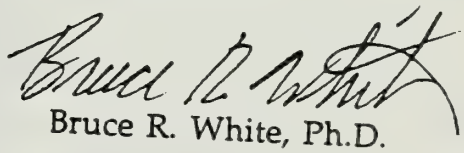
On the positive side, the Option C setting does improve the wind environment in a number of areas including locations #2, 19 and 25, all of which, would come into compliance of the Wind Ordinance's hazard criterion standard. However, these wind environment improvements do not offset the large and substantial 200% increase (to 183 hours from 61 hours) that would be occur on the Fox Plaza area, which is a heavily used pedestrian-area today.

Overall, the Option C setting would create 631 hours exceedence per year of the hazard criterion at the 41 measured surface locations as compared to 868 hours in the existing setting.

In summary, the KMD Option C setting is unacceptable from both a pedestrian safety concern and San Francisco Ordinance violations of pedestrian areas on the Fox Plaza and the proposed plaza (location #36 as tested).

Hopefully, these results will be useful in reaching an accurate wind environment assessment of the Tenth and Market Streets site of the proposed GSA Federal Courthouse Building Project. Please do not hesitate to contact me if additional explanation of any of the presented wind-tunnel results and implications stated herein are desired.

Sincerely yours,



Bruce R. White, Ph.D.

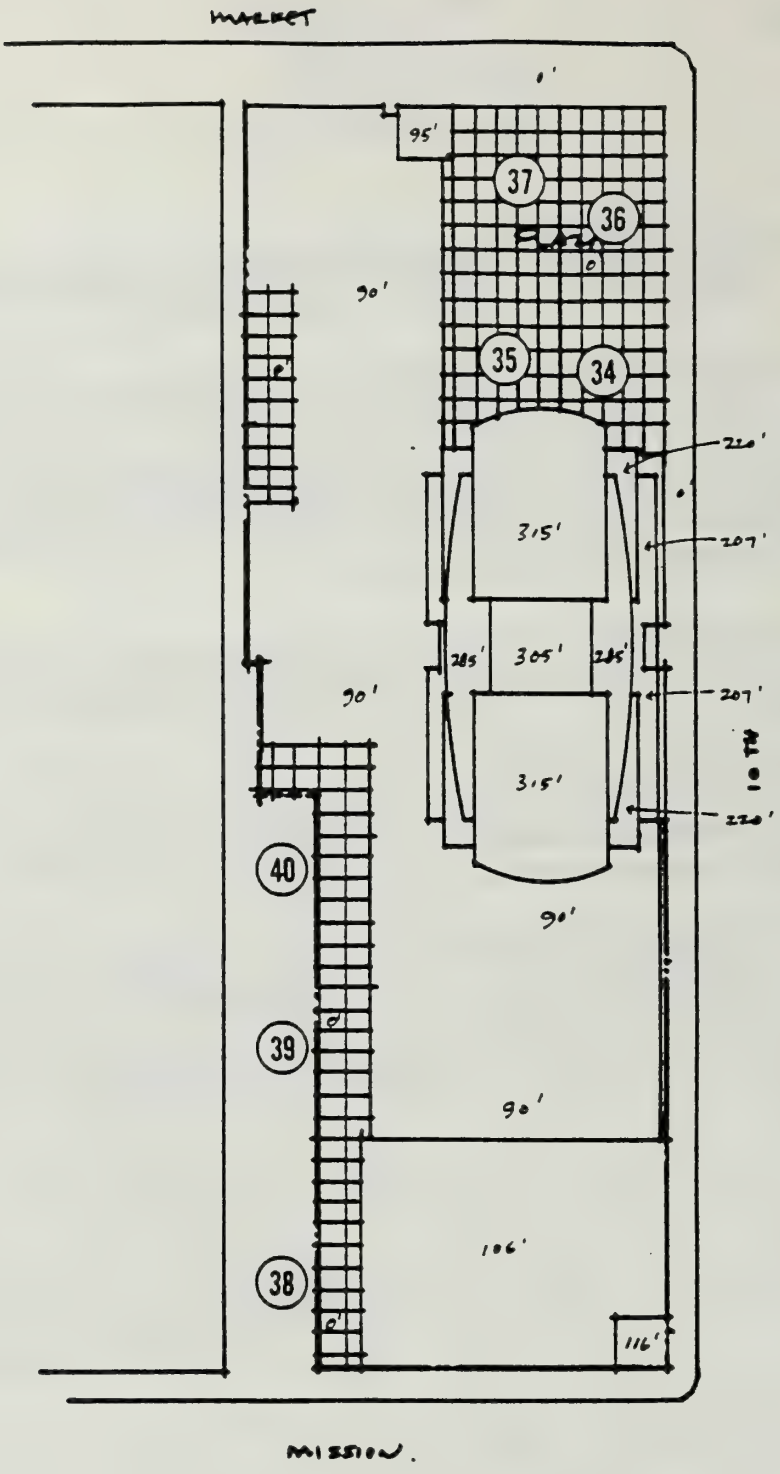


Figure 1 Location of Pedestrian-level Near Surface Measurement Point 34 to 40. Location #41 is Adjacent to Location #1 on the Fox Tower Plaza Area.

OPTION C.



Photograph courtesy of the San Francisco Chronicle.

Figure 2 Photograph capturing the existing hazardous wind environment that sometimes occurs on and near the Fox Plaza Tower. Note, the Fox Plaza sign in the upper right hand corner of the photograph.

Table 1 Hazard Criterion Evaluation for Option C and Existing Setting						
S. F. 7/24/94 Federal Bldg.		Existing		Option C		
#	Crit.	HAZ	*Ex. Hours*	HAZ	diff.	*Ex. Hours*
1	36	X	*60.85*	X	+	*73.40*
2	36	X	*1.81*		-	*0.00*
3	36		*0.17*		-	*0.00*
4	36		*0.00*		-	*0.00*
5	36		*0.00*		+	*0.11*
6	36		*0.00*		+	*0.00*
7	36		*0.00*		+	*0.00*
8	36	X	*209.26*	X	-	*161.67*
9	36	X	*111.40*	X	-	*4.33*
10	36	X	*16.15*	X		*15.53*
11	36	X	*3.60*	X	+	*4.33*
12	36		*0.00*		-	*0.00*
13	36	X	*31.32*	X	-	*5.05*
14	36		*0.00*		-	*0.00*
15	36		*0.00*		-	*0.00*
16	36		*0.00*		-	*0.00*
17	36		*0.00*		-	*0.00*
18	36		*0.00*		-	*0.00*
19	36	X	*4.19*		-	*0.00*
20	36	X	*18.31*	X	+	*8.69*
21	36		*0.00*			*0.00*
22	36		*0.00*		+	*0.00*
23	36		*0.54*		-	*0.00*
24	36		*0.00*		+	*0.00*
25	36	X	*4.77*		-	*0.62*
26	36	X	*198.03*	X	-	*78.86*
27	36		*0.68*		-	*0.00*
28	36		*0.00*		-	*0.00*
29	36		*0.00*			*0.00*
30	36	X	*63.59*	X	-	*43.15*
31	36	X	*21.55*	X	-	*5.47*
32	36		*0.00*		-	*0.00*
33	36	X	*53.42*	X	-	*22.07*
34	36		*N/A*		+	*0.00*
35	36		*N/A*		+	*0.00*
36	36		*N/A*	X	+	*24.49*
37	36		*N/A*		+	*0.08*
38	36		*N/A*		+	*0.00*
39	36		*N/A*		+	*0.00*
40	36		*N/A*		+	*0.00*
41	36	X	*60.85*	X	+	*183.17*

WIND-TUNNEL TEST RESULTS

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Option C TEST DATE: 7/20/94

The ratios of pedestrian-level wind speeds to the 132-ft. height reference wind speeds are shown in the first line of output for each location.

The second line of the output shows the pedestrian level wind speeds, mph, which would be exceeded 0.0% of the time for each measurement location. Section 148 of the Downtown Plan sets comfort criteria of 11 mph for pedestrian areas and 7 mph for seating areas. These criteria are not to be exceeded more than 10% of the time.

The third line of output for each location shows the criterion speed and the percentage of the time the criterion would be exceeded. The rows labeled CONTRIB tabulate the percentage contribution to the exceedances from each wind direction.

Location	0.01141% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
1				RATIOS	1.0498	1.3520	1.0034	0.6952	1.0251	
	49.0			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.04%	99.96%	0.00%	0.00%	0.00%	275
2				RATIOS	0.6630	0.5412	0.9930	1.0160	0.8033	
	31.9			CONTRIB	0.00%	0.00%	14.26%	85.74%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.37%	99.63%	0.00%	0
3				RATIOS	0.3666	0.5094	0.7816	0.8848	0.6356	
	27.4			CONTRIB	0.00%	0.00%	0.02%	99.98%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
4				RATIOS	0.5480	0.7034	0.7456	0.4522	0.6123	
	25.3			CONTRIB	0.00%	99.83%	0.17%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
5				RATIOS	1.0684	0.5090	0.5982	0.6264	0.7005	
	34.9			CONTRIB	100.00%	0.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	100.00%	0.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.4548	0.6494	0.8636	0.6710	0.6597	
	49.0			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
7				RATIOS	0.8992	0.8556	0.9768	0.8298	0.8903	
	49.4			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
8				RATIOS	1.2050	1.4962	0.9664	0.7714	1.1097	
	54.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	1	CONTRIB	3.23%	96.77%	0.00%	0.00%	0.01%	605
9				RATIOS	0.5020	1.0670	0.7550	0.8230	0.7867	
	38.6			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	16
10				RATIOS	0.8942	1.1340	0.5624	0.4510	0.7604	
	41.2			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	58
11				RATIOS	0.8116	1.0670	0.5976	0.4132	0.7223	
	38.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	16
12				RATIOS	0.6598	0.7558	0.4988	0.3530	0.5668	
	27.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
13				RATIOS	1.1020	1.0650	0.7606	0.3134	0.8102	
	38.7			CONTRIB	0.71%	99.29%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	17.71%	82.29%	0.00%	0.00%	0.00%	19
14				RATIOS	0.6192	0.5808	0.5214	0.2596	0.4952	
	21.1			CONTRIB	5.21%	94.79%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0

WIND-TUNNEL TEST RESULTS

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Option C TEST DATE: 7/20/94

ca-ion	0.01141% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
5				RATIOS	0.5430	0.6520	0.4624	0.4780	0.5338	
	23.5			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
6				RATIOS	0.1610	0.2694	0.3648	0.7508	0.3865	
	22.9			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
7				RATIOS	0.3392	0.7678	0.4948	0.6578	0.5649	
	27.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
8				RATIOS	0.5090	0.4670	0.4832	0.6316	0.5227	
	19.3			CONTRIB	0.00%	0.36%	0.00%	99.63%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
9				RATIOS	0.5972	0.7854	0.6232	0.4362	0.6105	
	28.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
0				RATIOS	0.6006	0.7132	1.1826	0.8310	0.8318	
	45.2			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	100.00%	0.00%	0.00%	33
1				RATIOS	0.7168	0.8378	0.9150	0.6058	0.7688	
	30.2			CONTRIB	0.00%	98.34%	1.66%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	0
2				RATIOS	0.2350	0.3178	0.3514	0.2762	0.2951	
	21.9			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
3				RATIOS	0.7748	0.8338	0.4688	1.0086	0.7715	
	31.8			CONTRIB	0.00%	30.52%	0.00%	69.48%	0.00%	4
		36.0	0	CONTRIB	0.00%	11.25%	0.00%	88.75%	0.00%	0
4				RATIOS	0.5112	0.7612	0.7226	0.8624	0.7143	
	40.4			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
5				RATIOS	0.4916	0.9730	0.8226	0.4928	0.6950	
	35.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	2
6				RATIOS	0.5934	1.2254	1.3856	0.9352	1.0349	
	44.5			CONTRIB	0.00%	86.40%	13.60%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	40.10%	59.90%	0.00%	0.00%	295
7				RATIOS	0.5118	0.8556	0.8486	0.9330	0.7872	
	31.3			CONTRIB	0.00%	88.16%	0.00%	11.84%	0.00%	3
		36.0	0	CONTRIB	0.00%	98.91%	0.00%	1.09%	0.00%	0
8				RATIOS	0.5272	0.6766	0.5670	0.3892	0.5400	
	24.3			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
9				RATIOS	0.4964	0.5400	0.5214	0.7134	0.5678	
	21.9			CONTRIB	0.00%	1.23%	0.00%	98.77%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
0				RATIOS	1.0482	1.2706	0.8290	0.3766	0.8811	
	45.7			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.07%	99.93%	0.00%	0.00%	0.00%	162

SF
SAN FRANCISCO, CALIFORNIA
Federal Bldg. Option C TEST DATE: 7/20/94

Location	0.01141% Ground Speed	Speed Exc.	Exc. % Time Exc.	---Criterion---	NW	WNW	W	WSW	OTHER	SUM
31				RATIOS	1.2028	0.9486	0.4856	0.4412	0.7695	
	39.3			CONTRIB	99.63%	0.37%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	93.31%	6.69%	0.00%	0.00%	0.00%	20
32				RATIOS	0.1902	0.5444	0.3688	0.6780	0.4453	
	21.0			CONTRIB	0.00%	22.93%	0.00%	77.07%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
33				RATIOS	0.4832	1.1750	0.4972	0.3896	0.6362	
	42.4			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	83
34				RATIOS	0.7420	0.6884	0.4856	0.3702	0.5715	
	25.1			CONTRIB	9.31%	90.69%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
35				RATIOS	0.6296	0.6278	0.5248	0.4688	0.5627	
	22.7			CONTRIB	0.10%	99.90%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
36				RATIOS	1.0828	1.1878	0.5596	0.5404	0.8426	
	43.0			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	1.09%	98.91%	0.00%	0.00%	0.00%	92
37				RATIOS	1.0620	0.8816	0.3590	0.3134	0.6540	
	34.7			CONTRIB	92.41%	7.59%	0.00%	0.00%	0.00%	4
		36.0	0	CONTRIB	89.98%	10.02%	0.00%	0.00%	0.00%	0
38				RATIOS	0.3824	0.4762	0.3670	0.1908	0.3541	
	25.1			CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
39				RATIOS	0.2750	0.4662	0.3752	0.3278	0.3610	
	16.9			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
40				RATIOS	0.0964	0.3328	0.3578	0.5902	0.3443	
	18.2			CONTRIB	0.00%	0.00%	0.00%	100.00%	0.00%	3
		36.0	0	CONTRIB	0.00%	0.00%	0.00%	0.00%	0.00%	0
41				RATIOS	1.0498	1.5494	1.0034	0.6952	1.0744	
	56.1			CONTRIB	0.00%	100.00%	0.00%	0.00%	0.00%	4
		36.0	2	CONTRIB	0.02%	99.98%	0.00%	0.00%	0.00%	686

APPENDIX I

AESTHETIC/VISUAL RESOURCES

SUMMARY OF OBJECTIVES AND POLICIES

CITY PATTERN

OBJECTIVE 1

EMPHASIS OF THE CHARACTERISTIC PATTERN WHICH GIVES TO THE CITY AND ITS NEIGHBORHOODS AN IMAGE, A SENSE OF PURPOSE, AND A MEANS OF ORIENTATION.

POLICY 1

Recognize and protect major views in the city, with particular attention to those of open space and water.

POLICY 2

Recognize, protect and reinforce the existing street pattern, especially as it is related to topography.

POLICY 3

Recognize that buildings, when seen together, produce a total effect that characterizes the city and its districts.

POLICY 4

Protect and promote large-scale landscaping and open space that define districts and topography.

POLICY 5

Emphasize the special nature of each district through distinctive landscaping and other features.

POLICY 6

Make centers of activity more prominent through design of street features and by other means.

POLICY 7

Recognize the natural boundaries of districts, and promote connections between districts.

POLICY 8

Increase the visibility of major destination areas and other points for orientation.

POLICY 9

Increase the clarity of routes for travelers.

POLICY 10

Indicate the purposes of streets by means of a citywide plan for street landscaping.

POLICY 11

Indicate the purposes of streets by means of a citywide plan for street lighting.

CONSERVATION

OBJECTIVE 2

CONSERVATION OF RESOURCES WHICH PROVIDE A SENSE OF NATURE, CONTINUITY WITH THE PAST, AND FREEDOM FROM OVERCROWDING.

POLICY 1

Preserve in their natural state the few remaining areas that have not been developed by man.

POLICY 2

Limit improvements in other open spaces having an established sense of nature to those that are necessary, and unlikely to detract from the primary values of the open space.

POLICY 3

Avoid encroachments on San Francisco Bay that would be inconsistent with the Bay Plan or the needs of the city's residents.

POLICY 4

Preserve notable landmarks and areas of historic, architectural or aesthetic value, and promote the preservation of other buildings and features that provide continuity with past development.

POLICY 5

Use care in remodeling of older buildings, in order to enhance rather than weaken the original character of such buildings.

POLICY 6

Respect the character of older development nearby in the design of new buildings.

POLICY 7

Recognize and protect outstanding and unique areas that contribute in an extraordinary degree to San Francisco's visual form and character.

POLICY 8

Maintain a strong presumption against the giving up of street areas for private ownership or use, or for construction of public buildings.

POLICY 9

Review proposals for the giving up of street areas in terms of all the public values that streets afford.

POLICY 10

Permit release of street areas, where such release is warranted, only in the least extensive and least permanent manner appropriate to each case.

MAJOR NEW DEVELOPMENT

OBJECTIVE 3

MODERATION OF MAJOR NEW DEVELOPMENT TO COMPLEMENT THE CITY PATTERN, THE RESOURCES TO BE CONSERVED, AND THE NEIGHBORHOOD ENVIRONMENT.

POLICY 1

Promote harmony in the visual relationships and transitions between new and older buildings.

POLICY 2

Avoid extreme contrasts in color, shape and other characteristics which will cause new buildings to stand out in excess of their public importance.

POLICY 3

Promote efforts to achieve high quality of design for buildings to be constructed at prominent locations.

POLICY 4

Promote building forms that will respect and improve the integrity of open spaces and other public areas.

POLICY 5

Relate the height of buildings to important attributes of the city pattern and to the height and character of existing development.

POLICY 6

Relate the bulk of buildings to the prevailing scale of development to avoid an overwhelming or dominating appearance in new construction.

POLICY 7

Recognize the special urban design problems posed in development of large properties.

POLICY 8

Discourage accumulation and development of large properties, unless such development is carefully designed with respect to its impact upon the surrounding area and upon the city.

POLICY 9

Encourage a continuing awareness of the long-term effects of growth upon the physical form of the city.

NEIGHBORHOOD ENVIRONMENT

OBJECTIVE 4

IMPROVEMENT OF THE NEIGHBORHOOD ENVIRONMENT TO INCREASE PERSONAL SAFETY, COMFORT, PRIDE AND OPPORTUNITY

POLICY 1

Protect residential areas from the noise, pollution and physical danger of excessive traffic.

POLICY 2

Provide buffering for residential properties when heavy traffic cannot be avoided.

POLICY 3

Provide adequate lighting in public areas.

POLICY 4

Design walkways and parking facilities to minimize danger to pedestrians.

POLICY 5

Provide adequate maintenance for public areas.

POLICY 6

Emphasize the importance of local centers providing commercial and government services.

POLICY 7

Encourage and assist in voluntary programs for neighborhood improvement.

POLICY 8

Provide convenient access to a variety of recreation opportunities.

POLICY 9

Maximize the use of recreation areas for recreational purposes.

POLICY 10

Encourage or require the provision of recreation space in private development.

POLICY 11

Make use of street space and other unused public areas for recreation.

POLICY 12

Install, promote and maintain landscaping in public and private areas.

POLICY 13

Improve pedestrian areas by providing human scale and interest.

POLICY 14

Remove and obscure distracting and cluttering elements.

POLICY 15

Protect the livability and character of residential properties from the intrusion of incompatible new buildings.

OPEN SPACE

OBJECTIVE 9

PROVIDE QUALITY OPEN SPACE IN SUFFICIENT QUANTITY AND VARIETY TO MEET THE NEEDS OF DOWNTOWN WORKERS, RESIDENTS, AND VISITORS.

POLICY 1

Require usable indoor and outdoor open space, accessible to the public, as part of new downtown development.

POLICY 2

Provide different kinds of open space downtown.

POLICY 3

Give priority to development of two categories of highly valued open space; sunlit plazas and parks.

POLICY 4

Provide a variety of seating arrangements in open spaces throughout downtown.

POLICY 5

Improve the usefulness of publicly owned rights-of-way as open space.

OBJECTIVE 10

ASSURE THAT OPEN SPACES ARE ACCESSIBLE AND USABLE.

POLICY 1

Develop an open space system that gives every person living and working downtown access to a sizable sunlit open space within convenient walking distance.

POLICY 2

Encourage the creation of new open spaces that become a part of an interconnected pedestrian network.

POLICY 3

Keep open space facilities available to the public.

POLICY 4

Provide open space that is clearly visible and easily reached from the street or pedestrian way.

POLICY 5

Address the need for human comfort in the design of open spaces by minimizing wind and maximizing sunshine.

OBJECTIVE 11

PROVIDE CONTRAST AND FORM BY CONSCIOUSLY TREATING OPEN SPACE AS A COUNTERPOINT TO THE BUILT ENVIRONMENT.

POLICY 1

Place and arrange open space to complement and structure the urban form by creating distinct openings in the otherwise dominant streetwall form of downtown.

POLICY 2

Introduce elements of the natural environment in open space to contrast with the built-up environment.

PRESERVING THE PAST

OBJECTIVE 12

CONSERVE RESOURCES THAT PROVIDE CONTINUITY WITH SAN FRANCISCO'S PAST.

POLICY 1

Preserve notable landmarks and areas of historic, architectural, or aesthetic value, and promote the preservation of other buildings and features that provide continuity with past development.

POLICY 2

Use care in remodeling significant older buildings to enhance rather than weaken their original character.

POLICY 3

Design new buildings to respect the character of older development nearby.

URBAN FORM

Height and Bulk

OBJECTIVE 13

CREATE AN URBAN FORM FOR DOWNTOWN THAT ENHANCES SAN FRANCISCO'S STATURE AS ONE OF THE WORLD'S MOST VISUALLY ATTRACTIVE CITIES.

POLICY 1

Relate the height of buildings to important attributes of the city pattern and to the height and character of existing and proposed development.

POLICY 2

Foster sculpturing of building form to create less overpowering buildings and more interesting building tops, particularly the tops of towers.

POLICY 3

Create visually interesting terminations to building towers.

POLICY 4

Maintain separation between buildings to preserve light and air and prevent excessive bulk.

Sunlight and Wind

OBJECTIVE 14

CREATE AND MAINTAIN A COMFORTABLE PEDESTRIAN ENVIRONMENT.

POLICY 1

Promote building forms that will maximize the sun access to open spaces and other public areas.

POLICY 2

Promote building forms that will minimize the creation of surface winds near the base of buildings.

Building Appearance

OBJECTIVE 15

TO CREATE A BUILDING FORM THAT IS VISUALLY INTERESTING AND HARMONIZES WITH SURROUNDING BUILDINGS.

POLICY 1

Ensure that new facades relate harmoniously with nearby facade patterns.

POLICY 2

Assure that new buildings contribute to the visual unity of the city.

POLICY 3

Encourage more variation in building facades and greater harmony with older buildings through use of architectural embellishments and bay or recessed windows.

Streetscape

OBJECTIVE 16

CREATE AND MAINTAIN ATTRACTIVE, INTERESTING URBAN STREETSCAPES

POLICY 1

Conserve the traditional street to building relationship that characterizes downtown San Francisco.

POLICY 2

Provide setbacks above a building base to maintain the continuity of the predominant streetwalls along the street.

POLICY 3

Maintain and enhance the traditional downtown street pattern of projecting cornices on smaller buildings and projecting belt courses on taller buildings.

POLICY 4

Use designs and materials and include activities at the ground floor to create pedestrian interest.

POLICY 5

Encourage the incorporation of publicly visible art works in new private development and in various public spaces downtown.

MOVING ABOUT

MOVING TO AND FROM DOWNTOWN

OBJECTIVE 17

DEVELOP TRANSIT AS THE PRIMARY MODE OF TRAVEL TO AND FROM DOWNTOWN.

POLICY 1

Build and maintain rapid transit lines from downtown to all suburban corridors and major centers of activity in San Francisco.

POLICY 2

Expand existing non-rail transit service to downtown.

POLICY 3

Establish exclusive transit lanes on bridges, freeways and city streets where significant transit service exists.

POLICY 4

Coordinate regional and local transportation systems and provide for interline transit transfers.

POLICY 5

Provide for commuter bus loading at off-street terminals and at special curbside loading areas at non-congested locations.

POLICY 6

Make convenient transfers possible by establishing common or closely located terminals for local and regional transit systems.

POLICY 7

Continue ferries and other forms of water-based transportation as an alternative method of travel between San Francisco and the north bay.

OBJECTIVE 18

ENSURE THAT THE NUMBER OF AUTO TRIPS TO AND FROM DOWNTOWN WILL NOT BE DETRIMENTAL TO THE GROWTH OR AMENITY OF DOWNTOWN.

POLICY 1

Do not increase (and where possible reduce) the existing automobile capacity of the bridges, highways and freeways entering the city.

POLICY 2

Provide incentives for the use of transit, carpools and vanpools, and reduce the need for new or expanded automobile parking facilities.

POLICY 3

Discourage new long-term commuter parking spaces in and around downtown. Limit long-term parking spaces serving downtown to the number that already exists.

APPENDIX J

ENERGY CALCULATIONS

APPENDIX J

ESTIMATED OPERATIONAL ENERGY USE AT THE SAN FRANCISCO FEDERAL BUILDING

Daily Natural Gas Consumption (a)

Estimated natural gas consumption per square foot	11 Btu or .00011 Therms (b)
Estimated building natural gas consumption	7,425,000 Btu or 74.3 Therms (c)

Daily Electric Consumption (d)

Estimated electric consumption per square foot	0.39 kWh or 3993 Btu (b)
Estimated building electric consumption	263,250 kWh or 26.95 billion Btu (c)

Annual Consumption (e)

Estimated annual natural gas consumption	19305 Therms (1.93 billion Btu)
Estimated annual electricity consumption	68.4 million kWh (700.3 billion Btu)
Estimated annual energy consumption	702.2 billion Btu (120,740 barrels of oil)

(a) Natural gas consumption based on City and County of San Francisco Library Environmental Impact Report, February 1992. The PG&E Company has indicated that no natural gas consumption rates currently exist (James Crane, Written Communication, March 22, 1994).

(b) Energy Conversion factors

one gallon gasoline	= 125,000 Btu
one kilowatt hour (kWh)	= 10,239 Btu
one therm	= 100,000 Btu
one barrel of oil	= 5,600,000 Btu

(c) Assumes 675,000 gross-square-foot building

(d) Electrical consumption based on PG&E, Written Communication, March 1994.

(e) Assumes 260 day per operation per year (52 weeks per year x 5 days per week)

ESTIMATED OFFSITE VEHICLE ENERGY USE

Vehicle Miles Traveled (VMT)

10,350 daily vehicle trips (a)
592 daily bus trips (b)

10,942 total trips x 260 days (c) x 6.2 miles per trip (a) x 21.9 miles per gallon (d) = 805,411 gallons per year

Muni Electric Energy Consumption

546 daily Muni trips (b) x 260 days (c) x .0011 kWh per Muni trip (e) = 156,200 kWh per year

BART Energy Consumption

340 daily BART trips (b) x 260 days (c) x .0020 kWh per BART trip = 176,800 kWh per year

Estimated Annual Energy Consumption (e)

Electric Consumption - Muni/BART	333,000 kWh (3.4 billion Btu)
Petroleum Consumption - VMT	805,411 gallons (100 billion Btu)
Estimated Annual Consumption	103.4 billion Btu (17,777 barrels of oil)

(a) Wilbur Smith Associates (WSA), 1994

(b) Assumed to be double the peak-hour riderships obtained from WSA, 1994

(c) Assumes 260 work days per year (52 weeks per year x 5 days per week)

(d) American Automobile Manufacturers Association, 1993

(e) City and County of San Francisco, February 1992; estimated by dividing total usage factor 856,700 kWh by total Muni trips of 814,000

(f) City and County of San Francisco Library Environmental Impact Report, February 1992; estimated by dividing total usage factor 409,500 kWh by total Muni trips of 202,000

(g) Energy Conversion factors

one gallon gasoline	= 125,000 Btu
one kilowatt hour (kWh)	= 10,239 Btu
one therm	= 100,000 Btu
one barrel of oil	= 5,600,000 Btu

APPENDIX K

CULTURAL RESOURCES INVENTORY REPORT

ARCHEO-TEC
Consulting Archaeologists

5283 Broadway
Oakland, California 94618
(510) 601-6185
Fax (510) 601-8203

Mr. Thomas G. Conrad
Chief Planner, Technical Services Division
San Francisco Redevelopment Agency
770 Golden Gate Avenue
San Francisco, California 94102

10 July 1995

Dear Mr. Conrad:

Enclosed please find Archeo-Tec's report entitled **Draft Phase 1 Cultural Resources Overview Study for the General Services Administration Site Located at the Intersection of Tenth and Market Street, San Francisco, California.**

At your request, I have delivered a copy of this report to Ms. Joan Byrens of the General Services Administration, and I have forwarded a copy to Chris Clark at Furgo West in San Luis Obispo. I look forward to hearing your comments regarding the enclosed document. If you have any questions, please do not hesitate to contact me at your convenience.

Sincerely yours,

Allen G. Pastron, Ph.D
President, Archeo-Tec Inc.

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DRAFT PHASE 1 ARCHIVAL CULTURAL RESOURCES OVERVIEW STUDY FOR THE GENERAL SERVICES ADMINISTRATION OFFICE BUILDING SITE LOCATED AT THE INTERSECTION OF TENTH AND MARKET STREETS, SAN FRANCISCO, CALIFORNIA

Executive Summary

At the request of Mr. Thomas G. Conrad, Chief Planner of the Technical Services Division, San Francisco Redevelopment Agency, the staff of Archeo-Tec Inc., under the direction of Principal Investigator Allen G. Pastron, Ph.D, has completed a draft Phase 1 archival cultural resources overview study of the General Services Administration office building site at the intersection of Tenth and Market Street, San Francisco, California. The research conducted in association with the present study consisted of a systematic review of the relevant historic literature and archival data base, including maps, photographs, oral accounts and other pertinent documentary sources at various local libraries, archival repositories and information centers.

A review of the relevant archival literature revealed that the subject property was situated near an ecotone -- an area of environmental transition -- during the late Prehistoric/Protohistoric Period. Further, several extensive, well preserved and significant prehistoric archaeological sites have recently been encountered and investigated in relatively close proximity to the present study area within San Francisco's South of Market region. As such, the possible presence of significant, or potentially significance, subsurface prehistoric/protohistoric cultural resources within the confines of the subject property cannot, in the judgement of the Principal Investigator, be eliminated on the basis of available data.

By contrast to the findings adduced with regard to the Prehistoric/Protohistoric era, archival sources show little, if any, cultural activity occurring within the project area during the Spanish, Mexican and Early American historical eras. As such, there appears to be little possibility of encountering significant, or potentially significant, subsurface cultural resources from the early historic era within the project site.

The subject property was slow to develop throughout most of the 19th century. Nevertheless, at least one structure and, perhaps, a variety of associated cultural features as well, existed within the confines of the project area since the Early 1850s -- the height of the Gold Rush Period. Although specific archival data are generally lacking, this structure, as well as a variety of others that appeared within the confines of the subject property during the mid-to-late 1850s, probably served as residences and, perhaps, small-scale retail or commercial establishments as well. A review of archival data related to 19th century cutting, filling and other topographic alteration

suggests that possibly intact Gold Rush era cultural resources may exist beneath the ground surface at one or more locations within the confines of the study area.

From the late 1860s, or early 1870s, until the turn of the century, the subject property was primarily devoted to commercial and industrial uses. For example, a large lumber and mill company dominated the central portion of the project area during the final decades of the 19th century. In addition to several other industrial concerns, an engine company of the San Francisco Fire Department was located at 1749 Market Street, near the western perimeter of the subject property, during the later decades of the 19th century.

Following the Great San Francisco Earthquake and Fire of April, 1906, the present project area was slow to rebuild. For example, nothing but scattered lumber piles occupied the subject property as late as 1913. For the most part, the structures that were built within the confines of the project area during the 1920s and 1930s were, like those which preceded them, devoted to commercial and/or industrial uses. In the years following World War II, the present subject property assumed its present day configurations and characteristics.

On the basis of the data adduced during the course of the present Phase 1 archival cultural resources overview study, the following conclusions have been reached. Archival research suggests, although by no means confirms, that potentially significant subsurface cultural resources from the Prehistoric/Protohistoric Period, Gold Rush era and Later 19th Century Period may exist at one or more locations within the confines of the project area. Accordingly, a systematic program of preconstruction archaeological testing and evaluation is recommended. The principal goal of the recommended archaeological testing program would be to determine the presence or absence of subsurface cultural resources of significance, or potential significance, within the confines of the subject property. If such archaeological remains are encountered, corollary objectives of the recommended investigations would entail an assessment of the areal and temporal parameters, cultural characteristics and potential significance of those subsurface cultural resources that have been identified.

DRAFT PHASE 1 ARCHIVAL CULTURAL RESOURCES OVERVIEW STUDY FOR THE GENERAL SERVICES ADMINISTRATION OFFICE BUILDING SITE LOCATED AT THE INTERSECTION OF TENTH AND MARKET STREETS, SAN FRANCISCO, CALIFORNIA

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DRAFT

DRAFT PHASE 1 ARCHIVAL CULTURAL RESOURCES OVERVIEW STUDY FOR THE GENERAL SERVICES ADMINISTRATION OFFICE BUILDING SITE LOCATED AT THE INTERSECTION OF TENTH AND MARKET STREETS, SAN FRANCISCO, CALIFORNIA

Prepared for:

Mr. Thomas G. Conrad
Chief Planner, Technical Services Division
San Francisco Redevelopment Agency
770 Golden Gate Avenue
San Francisco, California 94102

Prepared by:

Archeo-Tec Inc.
5283 Broadway
Oakland, California 94618
July, 1995

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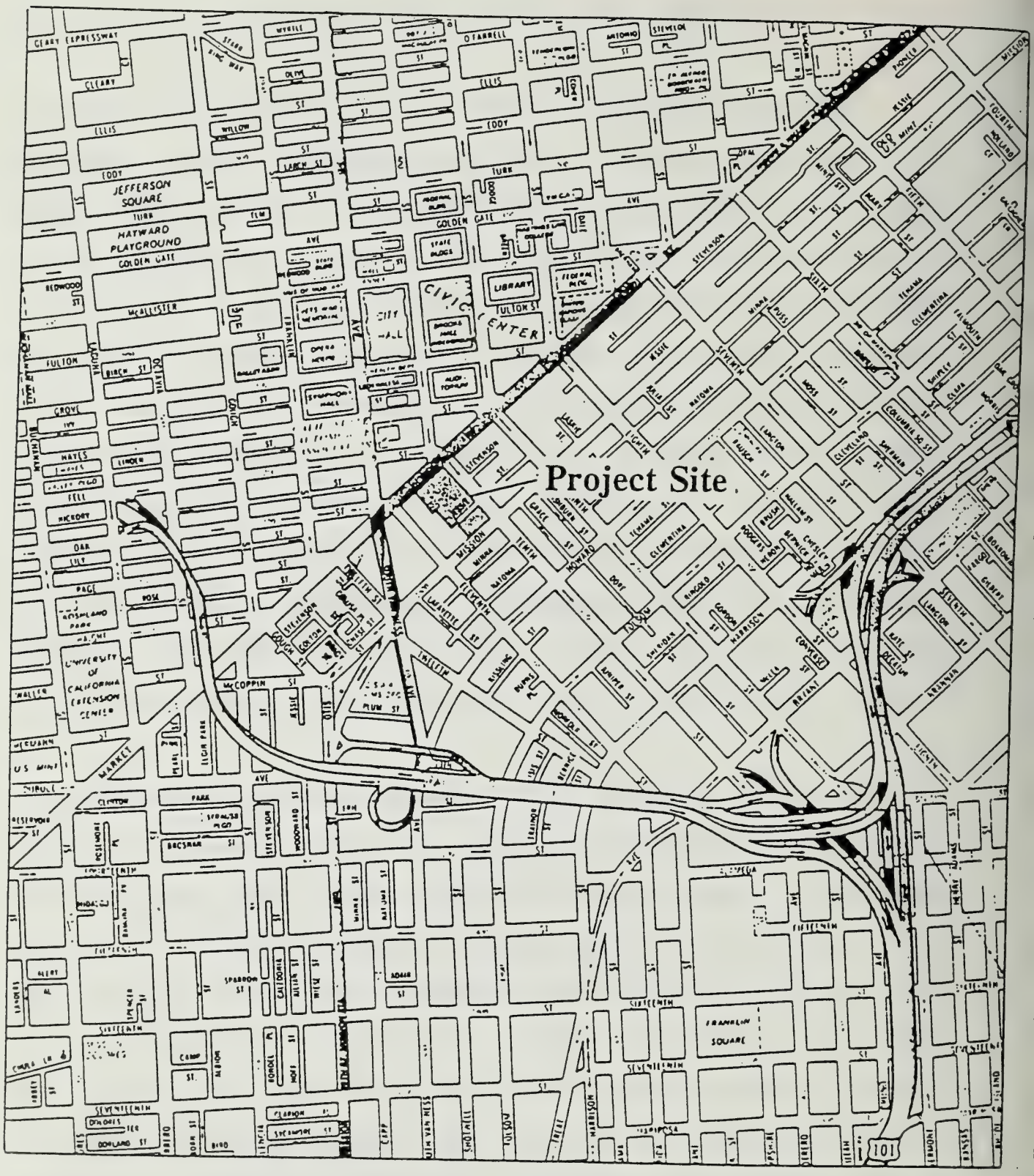
General Introduction, Site Location and Description

This report describes, interprets and evaluates the findings of a systematic Phase 1 archival cultural resources overview study of the Tenth and Market Street site in the City and County of San Francisco, California. The project area consists of an approximately 110,000 square-foot parcel of land in downtown San Francisco: the site has been selected by the U.S. General Services Administration for the proposed construction of a federal office building (see Figure 1). The subject property is located in San Francisco's South of Market region, within Township 2S, Range 5W, as shown on the 1956 San Francisco North, California, USGS 7.5' topographic quadrangle (photorevised in 1968 and 1973). The project area is situated less than one-half mile to the southwest of San Francisco's Civic Center Plaza.

The subject property is situated at an approximate elevation of approximately 50 feet above mean sea level. Specifically, the study area -- consisting of Assessor's Block 3507, Lots 3, 4, 5, 6, 9, 30, 34, and 37 -- is located at the southwestern corner of Tenth and Market streets and encompasses the eastern half of the city block bounded by Market, Mission, Tenth and Eleventh streets. Jessie Street enters the block from Tenth Street and does not continue past a point approximately midway through the subject property (see Figure 2). Present day topography within, and immediately adjacent to the project area is generally level, sloping slightly to the south-southeast. However, as we shall

REGIONAL LOCATION

Figure 1

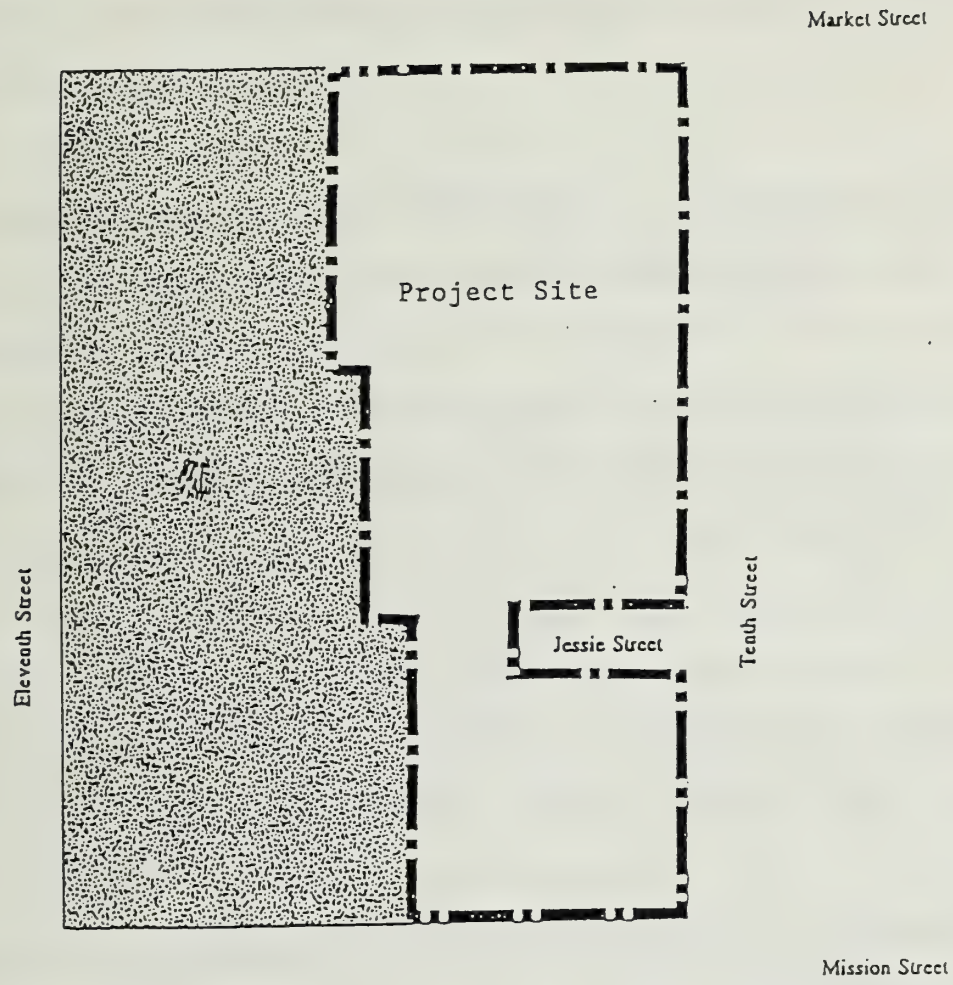


Tenth and Market Streets
San Francisco, California

BASELINE

FIGURE 2

SITE LOCATION MAP



Tenth and Market Streets
San Francisco, California

see in greater detail below, the original topography in and around the project site has been altered substantially since the property was first graded during the second half of the 19th century.

As of this writing, six buildings of two and four stories in height cover approximately half of the subject property; parking and vacant areas encompass the remainder of the project site. Current specifications call for the demolition of the existing structures in preparation for construction of the proposed federal office building.

As of the beginning of 1994, the structures existing within the confines of the subject property were devoted to a variety of commercial and retail uses. Tenants occupying the office buildings leased space from the Bank of America, the owner of the subject property. Retail and office spaces fronting onto Market Street included restaurants, copy and typesetting facilities, a shoe repair shop, a bar, a clothing store, and a photo-processing service. Offices of non-profit organizations, a direct mail operation, a data processing service, and a number of vacant offices front onto Tenth Street (Baseline Environmental Consulting 1994:1).

The archival research conducted in connection with the present Phase 1 cultural resources overview study was conducted by the staff of Archeo-Tec Inc., under the direct supervision of

Principal Investigator Allen G. Pastron, Ph.D. The work was authorized and performed at the request of Mr. Thomas G. Conrad, Chief Planner of the Technical Services Division for the San Francisco Redevelopment Agency.

The archival research conducted in association with the present Phase 1 cultural resources overview study had three primary objectives:

> 1) to adduce and describe relevant data pertaining to the history and development of the study area and its surroundings, including patterns of prehistoric/protohistoric and historic period settlement and land use, the nature of industrial, commercial and residential growth in and around the project area and the range of social and economic activities that took place within, and adjacent to the project site;
>
> 2) To determine with the greatest degree of specificity possible whether prehistoric/protohistoric and/or historic period cultural resources of demonstrated or potential significance existed within the confines of the subject property; and
>
> 3) to formulate and recommend appropriate measures and procedures to further investigate and/or mitigate the adverse impacts of proposed construction activities to significant, or potentially significant, surface and/or subsurface cultural resources existing within the confines of the project area.

Given the project objectives delineated above, the main text of this report presents a chronological history of the project sire and its surrounding, based upon a systematic examination of available archival documentation, pertaining to historical development within the block bounded by Market, Mission, Tenth and Eleventh streets.

The historical summary presented in the following pages is based on a review of available maps, photographs, oral accounts and other documentary materials on file at the Bancroft Library at the University of California, Berkeley, the California Historical Society in San Francisco, the California Archaeological Inventory's Northwest Information Center at Sonoma State University in Rohnert Park, the Archaeological Research Facility of the University of California at Berkeley, the San Francisco Redevelopment Agency, the Mechanic's Institute Library in San Francisco and the library of Archeo-Tec Inc. in Oakland.

As will be seen below, the history of the project site is one of commercial, industrial, municipal and limited residential uses since the property was graded and developed and during the second half of the 19th century. With the presentation of these introductory remarks, we shall now present the findings of the archival historical evaluation of the proposed Tenth and Market Street project area.

The Natural Setting

Before discussing patterns of demography and economic and social development within the confines of the present project area, it is appropriate to briefly consider the site and its surroundings in their natural state, before human habitation irrevocably altered the original landscape.

A glance at the 1852 U.S. Coast and Geodetic Survey Map for San Francisco reveals that prior to later 19th century filling and grading activities, the block bounded by Tenth, Eleventh, Market and Mission streets was situated amidst a series of undulating sand hills, approximately one-half mile to the north and east of the edge of marshlands that extended beyond Mission Creek and Mission Bay. Elevations within the project area ranged between roughly 15 feet above mean sea level at the southern boundary of the property to about 60 feet above mean sea level toward the north-eastern perimeter of the project site.

The 1852 U.S. Coast and Geodetic Survey map shows a single structure existing within, or immediately adjacent to the southeastern corner of the project area. No other evidence of occupation, development or systematic utilization of the site can be seen at that point in time. It should also be noted that in 1852, Tenth, Eleventh and Jessie streets had not yet been delineated, graded or constructed. Similarly, Market Street did not yet extend west of Fourth. Only the Plank Road -- later to become Mission Street -- extended past Fifth Street into the area of the present project area.

As we have seen, the entire subject property consisted of a series of sand hills situated in relatively close proximity to the marshes bordering Mission Creek and Mission Bay. As such, the study area can be said to represent an ecotone -- a transitional area between two adjacent ecological communities--

composed of marshlands and adjacent sand dunes and associated vegetation. Unfortunately, there is little archival information concerning specific types of native vegetation within the present subject area; no specific information concerning this subject is provided by the 1852 U.S. Coast and Geodetic Survey map or other archival documents pertaining to the early historic era. However, historic photographs, drawings and early written accounts of San Francisco confirm that the South of Market area was covered by undulating sand dunes which were, in all likelihood, characterized by the same varieties of flora found throughout most of the northern San Francisco peninsula -- mainly grasses, scrub brush and an occasional stand of oak trees or willows (e.g., Davis 1889:76).

Early European explorers marveled at the rich environment of the San Francisco Bay region. The area's marshes, like those which surrounded Mission Creek, had a particular abundance of both flora and fauna. Many early writers commented upon the seemingly inexhaustible numbers of both marine and terrestrial mammals, fish, shellfish and waterfowl (e.g., La Perouse 1794; Crespi 1927). For example, in 1833, George C. Yount offered a typically glowing appraisal of the unparalleled bounty of San Francisco Bay and its surroundings:

> ...animals were numerous beyond all parallel -- In herds of many hundreds they might be met, so tame that they would merely remove to open a way for the traveler to pass -- They were lying or grazing in immense herds on the sunny side of every hill, and their young like lambs, were frolicking in all directions -- The wild geese and every species of waterfowl darkened the surface of every bay and firth, and upon the land, in

> flocks of millions they wandered in quest of insects & cropping the wild oats which grew there in richest abundance -- When disturbed... the sound of their wings was like that of distant thunder -- The rivers were literally crowded, with salmon... It was literally a land of plenty -- and such climate as no other land upon the face of the earth can boast of... (Camp 1966:123).

This plethora of natural resources supported a thriving Native American population for thousands of years prior to the arrival of the first Euro-American immigrants (e.g., Kroeber 1925; Levy 1978; Moratto 1984; Chartkoff and Chartkoff 1984, Archeo-Tec 1990).

Prehistoric/Protohistoric Period (Ca. 6000 B.C. - 1775 A.D.)

The first task of the present archival cultural resources overview study was to determine the potential for encountering archaeological resources from the Prehistoric/Protohistoric Period within the confines of the present study area. When the Spanish first explored Northern California in the last quarter of the 18th Century, the region possessed what has been described as "the densest Indian population anywhere north of Mexico" (Margolin 1978:1). It has been estimated that between 7,000 and 10,000 Native Americans inhabited the naturally bountiful coastal area between Monterey County's Point Sur and the San Francisco Bay (Kroeber 1925:464; Margolin 1978:1).

Native American shellmounds -- massive heaps of ash, shell and cultural refuse -- once dotted the shoreline of the San

Francisco Bay. Kroeber offers the following observation regarding the extensive archaeological heritage of the region:

> The entire Costanoan frontage on ocean and bay is lined with shell deposits. San Francisco Bay in particular is richer in such remains than any other part of the State, except perhaps the Santa Barbara Islands (1925:466).

When University of California archaeologist Nels C. Nelson conducted the first intensive archaeological survey of the region between 1907 and 1908, he recorded no less than four hundred and twenty-five shellmounds on or near the shoreline of the Bay (Nelson 1909, 1910a).

Today, extensive and ongoing development has badly eroded this once impressive archaeological record. Relatively few Native American shellmounds or other types of prehistoric sites have been systematically investigated by archaeologists, and many basic research questions pertaining to the complex prehistory of the San Francisco Bay region remain unanswered for lack of first-hand data. Because of this, any reasonable opportunity to identify and study even a remnant of an aboriginal shellmound in the San Francisco Bay area must be deemed a potentially significant scientific event.

Given this preamble, we now turn our attention to the evidence at hand for the present project site. The first place to search for the presence of documented archaeological resources in the San Francisco Bay area is the archives of the California

Archaeological Inventory's Northwest Information Center, located on the campus of Sonoma State University in Rohnert Park. Additional documentation regarding the prehistoric/protohistoric record of the San Francisco Bay region was consulted at the Archaeological Research Facility of the University of California, Berkeley. A systematic review of the records on file at these archival repositories reveals that no prehistoric/prehistoric cultural resources have been recorded within the confines of the present subject property. However, this absence of data can almost certainly be attributed to the fact that the subject property has never been the object of a formal archaeological survey.

It should be noted that a number of prehistoric sites have been recorded in the South of Market area within a one mile radius of the present project area. Analysis of the locations and characteristics of these prehistoric deposits, particularly an evaluation of their proximity to the marshes bordering Mission Bay and Mission Creek, suggests that similar prehistoric cultural materials <u>may</u> exist within, or adjacent to, the present subject property at the intersection of Tenth and Market streets.

Until the mid-1980s, most of the known prehistoric sites in San Francisco were located in the Hunters Point -- Islais Creek area, several miles to the south of the present subject property. The largest and most important of these is CA-SFr-7 (Nelson's Shellmound # 387), variously referred to as the Crocker Mound,

the Bayshore site, and Johnson's Landing. Site CA-SFr-7 is located near Hunters Point, between three and four miles to the south of the present project area. A review of N.C. Nelson's unpublished manuscript, on file at the Archaeological Research Facility, University of California, Berkeley, revealed the following about the location and environmental setting of SFr-7:

> The mound lies of the northern edge of the lagoon and extends beyond the present branch out into the bay (Nelson 1910b: Manuscript # 11).

According to Nelson's site record, CA-SFr-7 at one time covered an area of approximately 60 feet north to south and 230 feet east to west. The mound was excavated by the staff and students of the University of California, Berkeley, in 1910. Recovered cultural materials included 60 artifacts, 23 human burials and a small historic period crucifix, at depths ranging between two and eight feet below the contemporary ground surface. Upon examination of the archaeological collection, Kroeber remarked that the "Artifacts obtained agree closely on the whole with those previously secured on the eastern shore of the bay" (1911:227). Most local archaeologists generally agree that unspecified portions of CA-SFr-7 remain undisturbed beneath the ground surface in the general vicinity of present day Candlestick Park (Banks 1981a, 1981b; Rudo 1982).

Several other prehistoric sites have been noted in and around Hunters Point. One of these is CA-SFr-17, exposed during the excavation of a garden plot in the U.S. Marine housing

project near the intersection of Alemany and Bayshore boulevards in 1951. The site record reveals that the mound was found on an old sand dune in immediate proximity to a marsh (site survey records on file at the Archaeological Research Facility, University of California, Berkeley). A contemporary newspaper article provides the following additional information regarding this site:

> [A] skeleton was found by J.C. Hoeger... while digging in his backyard. He found an old stone pestle near the skull and assumed that the remains were those of an Indian. A native resident said that some 20 years ago when Gavin Street was being built seven skulls and many Indian relics were found. According to police several bodies have been found in the area before, and it is presumed to be the site of an old Indian burial ground (San Francisco Call Bulletin, February 21, 1951).

Until relatively recently, many local archaeologists and historians tended to accept the assumption that intensive urban development in and around downtown San Francisco had probably resulted in the destruction of most, if not all, of the prehistoric/protohistoric sites that once existed in the area. Nonetheless, in the late 1970s, three prehistoric sites -- CA-SFr-29, CA-SFr-30 and CA-SFr-31 -- were encountered and investigated within the grounds of Fort Mason (Baker 1978). In addition to the finds made at Fort Mason, a deeply buried aboriginal skeleton was previously unearthed on the grounds of the U.S. Army Presidio (Heglar and Moratto 1973). However, it must be noted that all of these sites were found in an a part of San Francisco that had not been subject to intensive urbanization or development over the years, a fact that seemed directly

related to the preservation of these prehistoric/protohistoric archaeological resources.

In addition to the sites discussed above, recent archaeological work in San Francisco reveals that numerous relatively intact prehistoric deposits may be scattered throughout other parts of San Francisco, particularly within the South of Market area. These South of Market deposits are situated in relatively close proximity to the present subject property. Research indicates that all of these deposits were deeply buried beneath the region's sand dunes long before the beginning of the historic era. Hence, they were hidden from N.C. Nelson when he conducted his pioneering archaeological survey of the San Francisco Bay area. For the most part, these sites are buried deep enough below the present ground surface to have been spared the impacts of more than a century of intensive development.

For example, the discovery of a fragmentary human skeleton in October, 1969, during the course of excavation at the BART Civic Center station, and the subsequent analysis of the remains, points out the possibility of the existence of deeply buried prehistoric finds throughout San Francisco. The human remains were found about 75 feet below present grade, 26 feet below the mean sea level, and 14 feet above the bottom of a 40-foot layer of clay/silt underlying the sand characteristic of the 1852 surface topography (Kelly 1976:45; Olmsted et al. 1979:42). Radiocarbon dating places the bones at a surprisingly early 2950

± 250 years B.C. This radiocarbon date is the oldest in Central California for human remains (Henn and Schenck 1970; Henn et al. 1972).

Another prehistoric/protohistoric site situated to the south of Market Street CA-SFr-2, is located on the south side of Harrison Street, west of Third Street, and only approximately three quarters of a mile from the present project site. This prehistoric deposit (Nelson's Shellmound # 439) was encountered during construction work in 1929; it has been described as follows:

> The lot between two buildings was being excavated by steam shovel. On April 18, the work had ceased in order to brace the walls of the two adjacent buildings. The base of the shell deposit is 10 feet below street level. The deposit was about four feet thick, but may once have been deeper, as remains of an old building were resting on top of the deposit which probably had been cut away for the floor of the building. Underlying the shell deposit was black loam mostly and in one place yellow sand. An hour's scrutiny of the cuts through the deposit revealed no artifacts. Shell was very abundant, and there were pockets of whitish gray and yellow ash. Bird bones were fairly numerous and a few mammal bones were obtained. All of the specimens are cataloged as 1-27097 [at U.C. Berkeley's Lowie Museum of Anthropology]. More or less charcoal was visible in lumps. No human remains had been encountered by the steam shovel men. The same is true with regard to artifacts. Cooking stones were abundant (Site record for CA-SFr-2, perhaps written by E.W. Gifford, on file at the Lowie Museum of Anthropology, U.C. Berkeley).

As noted above, a good deal of charcoal was encountered, but none was saved, since in those days, before the introduction of radiocarbon dating, no data could be extracted from it. Hence, there are no C-14 dates from this particular site. SFr-2 is

believed to have been totally destroyed after being investigated by E.W. Gifford of the University of California at Berkeley (Kelly 1976:45).

Another example of a deeply buried find of prehistoric/protohistoric age was encountered in San Francisco's South of Market area in 1977 at the northwest corner of Third and Folsom streets -- the site of the present day Moscone Convention Center -- when a test boring encountered an obsidian scraper of undoubted aboriginal manufacture at a depth of between 18 and 20 feet (Pastron 1978:210). While only an isolated specimen, this find points to the fact that unrecorded prehistoric archaeological materials do indeed exist at various locations throughout San Francisco.

Before 1986, the last shellmound encountered in what today is downtown San Francisco was the above discussed SFr-2. However, in the Summer of 1986, the staff of Archeo-Tec discovered and excavated two deeply buried, previously unrecorded prehistoric shellmounds in San Francisco's South of Market district. These sites, now officially designated CA-SFr-112 and CA-SFr-113, are respectively located near the intersections of First and Mission streets and Fifth and Market streets. Both deposits, located in close proximity to the shoreline of the Bay, appear to have been buried by drifting dune sand prior to the beginning of the historic period and were therefore not recorded by Nelson or subsequent archaeological researchers. Both sites

were found to be reasonably intact at the time of their discovery.

Based on an analysis of artifact typology, coupled with radiocarbon and obsidian hydration evaluations, it was determined that CA-SFr-112 was intermittently inhabited between A.D. 400 and A.D. 900, while the more ancient CA-SFr-113 appears to have been occupied between 100 B.C. and A.D. 100 (Pastron and Walsh 1988a, 1988b).

It should also be noted that one other previously unrecorded prehistoric site, the Yerba Buena Shellmound (CA-SFr-114), was encountered by the staff of Archeo-Tec Inc. along the line of Howard Street, Between Third and Fourth streets in the summer of 1988 (e.g., Archeo-Tec 1988). The site was intensively excavated in the spring and summer of 1989 (e.g., Archeo-Tec 1990; Pastron 1990). The Yerba Buena Shellmound was much more extensive than the previously discussed CA-SFr-112 and CA-SFr-113, and contained a well preserved village/cemetery complex. Radiocarbon dates and associated data indicate that this site was occupied between the beginning of the Christian era and approximately A.D. 750 (Archeo-Tec 1990:57). The site yielded a rich and informative cultural assemblage including eleven human burials. As of this writing, the extensive body of archaeological data recovered from CA-SFr-114 is being analyzed, interpreted and prepared for publication.

The three recently discovered prehistoric archaeological sites in San Francisco's South of Market area were apparently located in places convenient for the exploitation of both maritime and littoral resources. One of these sites -- i.e. CA-SFr-113 -- appears to have been little more than transient encampment; on the other hand, the other two deposits -- CA-SFr-112 and particularly CA-SFr-114 -- appear to represent sizeable villages that had been occupied, at least intermittently, for substantial periods of time.

In any event, the presence of a multiplicity of deeply buried prehistoric deposits in one of the most intensively developed parts of San Francisco points to the strong possibility that other unrecorded archaeological deposits of similar, or even earlier age, may exist in various places throughout San Francisco, particularly the South of Market area. It is obvious that one cannot reasonably assume that intensive development and urbanization must inevitably result in the destruction of underlying prehistoric archaeological resources. Given the ever increasing evidence that the present subject property and its surroundings in the South of Market region may have situated within an ecotone favorable for intensive Native American habitation, it is the judgement of the present writer that prudence must be exercised when considering the possible presence of previously undocumented prehistoric archaeological deposits within the confines of the proposed subject property.

With specific regard to the block bounded by Market, Mission, Tenth and Eleventh streets, it is of some interest to note that the property was originally situated in relative proximity to the interface of the wet and dry environmental zones, may have represented a favorable setting for encampments of aboriginal hunters and gatherers. In this regard, it is useful to cite N.C. Nelson's discussion concerning the wide variety of environmental settings in which aboriginal shellmounds were located:

> [Shellmounds were] situated in a great variety of places; but, on the whole, the positions may be characterized as "convenient" rather than in any sense "strategic." Many of the largest mounds are located at the head of the sheltered coves (such as the Bayshore Mound -- CA-SFr-7), yet not a few deposits lie in thoroughly exposed places, out on the bluff and higher headlands. Occasionally a hillside, with or without any accommodating shelf or hollow, has been chosen, doubtless on account of some small spring issuing in the vicinity... Some mounds are found in apparently unnatural situations, such as on the plain where no streams pass, or out in the salt-marsh, where fresh water could not be had, [but] normally shellheaps lie close to sea level. The fact is that nearly all the mounds lie within fifty feet of the surface of the bay water... but exceptions occur, [some] mounds lie very far above the normal zone... [and] at least ten of the known deposits extend below sea level [for example, the Bayshore Mound, CA-SFr-7, and the Ellis Landing Mound in the city of Richmond, on the eastern shore of the bay] (Nelson 1909:328-329).

To conclude, it seems reasonable to state that the absence of documented prehistoric archaeological resources does not, in and of itself, by any means eliminate the possibility of encountering such materials within, or in close proximity to, the subject property. As we have seen, only a fraction of the total number of prehistoric/protohistoric sites in San Francisco were

ever systematically recorded; for by the time the first serious researchers arrived on the scene, the City had already been extensively developed. Recent research has demonstrated that many sites were simply covered over rather than destroyed: and in addition to the sites recently encountered in downtown San Francisco there are numerous examples in the annals of archaeology of prehistoric/protohistoric remains being casually blanketed by fill and built upon during the dynamic advances of a youthful urban center, only to be unexpectedly discovered years, or even centuries later, in the midst of construction or other topographic modification.

In conclusion, while archival sources provide no specific evidence to indicate that prehistoric/protohistoric cultural resources exist at one or more locations within the confines of the present study area, it is the judgement of the present writer that the possible existence of such archaeological materials within the project site cannot be conclusively eliminated on the basis of the historical data presently available for consideration.

Spanish and Mexican Periods (1776 - 1845)

Available archival data suggest that the chances of encountering cultural materials from the Spanish or Mexican periods within the confines of the block bounded by Market, Mission, Tenth and Eleventh streets are rather limited. Between the

appearance of the first Spanish ship to sail through the Golden Gate in 1775 (the San Carlos under the command of Lieutenant Juan Bautista de Ayala) and the mid-19th century discovery of gold at Sutter's Mill, population and maritime traffic in the San Francisco Bay were extremely limited. The principal centers of Spanish, and later Mexican activity in the region were the Presidio and Mission Dolores, both located a considerable distance from the present project site.

From the founding of the Mission and the Presidio in 1776 to the beginnings of Yerba Buena village (the original townsite of the City of San Francisco) in 1835, it appears unlikely that there was any systematic occupation or use of the present project site and/or its immediate surroundings. Indeed, as we shall see in greater detail below, this demographic situation remained largely unchanged until well after the start of the Gold Rush in the mid-19th century. However, it should be noted that infrequent activity associated with Mission Dolores or the various ranches scattered throughout the region might have brought people to the immediate surroundings of the present project site from time to time.

Documentary sources suggest that the Spanish were anything but vigorous in exploring or exploiting the economic potential of their newly acquired domains in Northern California.

> Communication among the... establishments in the Bay Area was entirety by land during the early period, although the Bay offered an alternative means of travel. The failure of the Spanish even to provide

> themselves with small boats that could be used for voyages on the Bay greatly surprised G.H. Von Langsdorff, the physician who accompanied Count Nicolai Rezenov on his famous visit to the Presidio of San Francisco in 1806 (Scott 1959:13).

From 1838 onward, Mission Dolores was accessed from the hamlet of Yerba Buena (as San Francisco was known then) by a sandy, unimproved dirt road. The following quote from historian J.S. Hittell vividly describes the necessity of an improved road from the city to the mission:

> The road was much needed, because the ordinary route to the mission, which was substantially the only place of resort outside the city, was very sandy, sinuous and difficult to travel - at one place making a great bend in order to avoid a broad ravine of quagmire or bog between the present lines of Seventh & Eighth (Hittell 1897:341).

This roadway was eventually planked in the early 1850s (Soule' et al. 1854:298) -- hence its name, Plank Road. As noted above, this thoroughfare eventually became Mission Street. It seems reasonable to assume that some carriage or horse traffic might have frequented the immediate surroundings of the present subject property. The literature also notes that there were occasional excursions to the then uninhabited South of Market area during the 1835 - 1845 period for hunting and picnicking. Although firm data are lacking in the historical literature, it is possible that these periodic recreational sojourns may have brought people into the vicinity of the present study area (Davis 1889:27, 66).

To summarize, although the immediate surroundings of the project site may have been occasionally visited, there is no data in the historical record to suggest any systematic occupation or use of the land within, or immediately adjacent to, the present project site prior to the start of the Gold Rush. In all likelihood, any subsurface cultural remains within the present project area attributable to this period would be limited to individual items lost or discarded in a generally unfrequented place.

As mentioned above, throughout the Spanish/Mexican era, the Mission was located approximately one mile to the southwest of the proposed project site, and although it is possible that activities of the Mission may have passed by or extended into the project site from time to time, it is unlikely that such activities would have left an impression in the archaeological record. According to historian J.S. Hittell, 1813 marked the peak of activity at the Mission. In that year, the Indian inhabitants of the mission numbered 1,205; in addition, there were 9,270 head of cattle, 10,120 sheep, 622 horses and a product of 6,114 bushels of grain (Hittell 1878:67). By contrast, H.H. Bancroft determined that 1820 was the apex of the Mission's population, when a total of 1,252 Indian neophytes were registered on church rolls (Bancroft 1886: volume 2, 374).

If it is unlikely that the activities of the Mission would have had anything more than a casual impact on the present

subject parcel, then it is even more unlikely that the Presidio would have left an impression, for this Spanish/Mexican era establishment was located a full three miles away. To reiterate, available archival data indicate that there is little likelihood of encountering cultural resources of demonstrated or potential significance from the Spanish/Mexican Period within the confines of the present subject property within the block bounded by Market, Mission, Tenth and Eleventh streets.

Early American and Early Gold Rush Periods (1846 - 1852)

The date of July 8, 1846, marked the conversion of the hamlet of San Francisco from Mexican to American jurisdiction. On this day, a landing party from the sloop-of-war Portsmouth, under the command of Captain John B. Montgomery, waded ashore at the town of Yerba Buena and raised the stars and stripes to the top of the flagpole in the town's dusty plaza, thereby claiming California for the United States. At the time, San Francisco's two hundred permanent residents occupied some fifty buildings scattered throughout the Yerba Buena Cove area (Soule' et al. 1854:173).

Following the American seizure of California, the town of Yerba Buena began to grow with what has been called "wonderful rapidity" (Soule' et al. 1854:173). By April 1, 1847, Yerba Buena contained a total of 79 buildings which have described as follows:

> twenty-two shanties, thirty-one frame houses, and twenty-six adobe buildings. In the course of the subsequent five months, seventy-eight new tenements were erected, viz: forty-seven of frame, eleven of adobe, and twenty shanties. About this time, the permanent population had increased to nearly four hundred (Soule' et al. 1854:173-174).

In 1847, Jasper O'Farrell, a civil engineer and newly appointed city surveyor, laid out the basic grid plan for the streets of San Francisco, expanding on a previous survey performed by J.J. Vioget in 1838 (Hittell 1878:86). O'Farrell delineated hundreds of "water lots" -- parcels of land along Yerba Buena cove that were at least partially exposed during periods of low tide. Throughout 1847, many of these water lots were sold at auction, mainly to real estate speculators, and often at prices ranging between $ 50.00 and $ 100.00 apiece (Watkins and Olmsted 1976:23). Thus, the stage was set for the explosion of landfilling which, beginning in 1849, would push the edge of the San Francisco waterfront well to the east of Montgomery Street (e.g., Dow 1973).

In 1848, on the eve of the California Gold Rush, San Francisco's population, now grown to a total of slightly more than eight hundred individuals, occupied approximately two hundred structures (Soule' et al. 1854:200). Within a few short months, the city by the Bay was to undergo one of the most dramatic and unprecedented explosions of population and building ever recorded in the annals of human affairs. With the advent of the Gold Rush, the sleepy hamlet of Yerba Buena disappeared

forever. However, it should be noted that the information presented in the preceding paragraphs is intended only as general background. As discussed above, there is no evidence that any of the cultural activities occurring in the vicinity of the Yerba Buena settlement during the Early Historic Period encroached upon, or had any impact whatever, within the confines of the present subject property near the corner of Tenth and Market streets. As far as can be determined by a systematic review of available archival sources, the vicinity of the present subject area remained in a completely natural state throughout the entirety of the Early American Period.

San Francisco's dynamic development during the Gold Rush years has been thoroughly documented in the historical literature (see, for example, Barry and Patten 1873; Beilharz and Lopez 1976; Borthwick 1857; Davis 1889; Hittell 1878, 1882; Lewis 1966; Lotchin 1974; Lockwood 1978; Olmsted et al. 1977a:265-278, 1977b:42-52; Olmsted et al. 1979:59-84; Pastron 1985; Schwendinger 1984; Soule' et al. 1854; and Wirth Associates 1979a, 1979b); accordingly, a detailed summary of this historical watershed is unnecessary here. Suffice it to say that within months of the discovery of gold in the Sierra Nevada foothills, the once sleepy, inconsequential hamlet of San Francisco was transformed overnight into what has been called an "instant city" (Lockwood 1978).

The city's population was not officially counted in 1849, but it had increased dramatically. "The number of inhabitants was estimated to be two thousand in February, three thousand in March and five thousand in July" (Hittell 1878:147). By November, according to Hittell, the city's population was slightly less than eight thousand individuals (Hittell 1878:148). Soule' et al., on the other hand, remark that by the end of 1849, San Francisco's population numbered at least "twenty, and probably nearer twenty-five thousand souls" (1854:244).

The population boom accompanying the Gold Rush prompted the first settlement and development of the South of Market area. There had been no structures existing to the south of Market Street before 1849, with the possible exception of the buildings belonging to the Bernal Rancho, in an area far to the south of the present project area (e.g. Olmsted et al 1981:35-41). By the close of 1849, however, "Happy Valley," an early encampment for adventurers who were awaiting the opportunity to journey to the gold fields, was nestled among the sand dunes to the south of Market Street, extending westward from the bay shoreline near what today is the intersection of First and Mission streets. Happy Valley, situated some three quarters of a mile to the east of the present project area, was first filled up with tents, then with frame houses. Several contemporary accounts vividly depict the boisterous character of Happy Valley during the first heady months of the Gold Rush:

> A part of the city worthy of notice is Happy Valley so called -- a large collection of tents pitched in a valley near the beach which may contain two thousand inhabitants, mostly new comers waiting to go to the mines... These locate in Happy Valley wherever they see fit. Any attempt to collect rent (there have been several such attempts made) is rejected as absurd. There appears to be a regular FREE SOIL movement carried out into pretty effectual operation, for half a mile above there any piece of land large enough to pitch a decent sized tent will rent for a very high price. In the valley, a variety of trades are carried on and there are a number of small shops with the sale of small articles and liquor (Caughey 1941:29).

Among the most extensive Happy Valley reminiscences are those of Samuel C. Upham, who arrived in San Francisco via Cape Horn early in August, 1849. On August 6, Upham made his initial arrangements to settle himself ashore:

> In the afternoon I visited the encampment of the golddiggers in Happy Valley, for the purpose of selecting a site on which to pitch my tent. On the following day I moved my luggage ashore, and located myself among the sojourners there. My provisions and mining implements were soon landed from the OSCEOLA, and I made the necessary arrangements for spending a few weeks in San Francisco as comfortably as possible...
>
> San Francisco -- formerly called Yerba Buena -- is a queer place. It contains at this time a dozen adobe structures and perhaps two hundred roughly-constructed frame buildings... The beach, Happy Valley, for the space of two miles, is covered with canvas and rubber tents, and the adjacent sand hills are dotted to their summits with these frail but convenient tenements of the prospective miner. The population, numbering perhaps five thousand, is as heterogeneous as their inhabitants. It seems as though every nation on the face of the earth had sent a representative to this place, and that they had all arrived with their credentials. Such a medley of languages and jargon of tongues the world has seldom seen. It is a modern Babel (Upham 1878:218-222).

Upham soon left San Francisco for the mines of the Sierra Nevada foothills, but returned in November. His comments on the

rapid changes taking place in San Francisco in the Fall of 1849 provide a rare first-hand view of a city in metamorphosis:

> San Francisco, during my absence of two months, had become so changed that I scarcely recognized it. Substantial frame buildings had superseded frail canvas tenements, and piers had been extended many hundred yards into the bay, at which vessels from the four quarters of the globe were discharging their cargoes. I visited the gold-diggers' encampment, Happy Valley, but that too was so changed, that I could hardly recognize a familiar spot or countenance. A three story warehouse was being erected on the spot where I had pitched my tent two months previously. The saw and hammer of the carpenter could be heard in every square, and the voice of the crier and auctioneer at the corner of nearly every street. The plaza was covered with booths, in which could be had the merchandise of all nations (Upham 1878:257-259).

Just before he left California in August, 1850, Upham once again commented upon the state of development within Happy Valley:

> Happy Valley, which four months previously, contained scarcely half a dozen frame buildings, now boasted as many hundreds. Verily, this EL DORADO is a wonderful country; and San Francisco, despite clouds of dust and chilly afternoons, is destined to become the second city of this continent. Farewell, San Francisco! (Upham 1878:357).

Upham, writing in the 1870s from both diary entries and personal recollections, erred in some of the particulars regarding that state of progress of Happy Valley in late 1849 and 1850. Nevertheless, his account vividly conveys the dynamism, growth and excitement characteristic of San Francisco during the initial year of the California Gold Rush.

By the time the 1852 U.S. Coast and Geodetic Survey map of San Francisco was published, the South of Market area was dotted with buildings, the greatest concentration of which were centered in the vicinity of First and Mission streets. The "gnarled oaks and thick underbrush" that had characterized the South of Market landscape in its natural state (Soule' et al. 1854:238) had, for the most part, been stripped away for use as fuel in the city's domiciles and at the numerous little foundries that had sprung up in Happy Valley and Rincon Point. These little foundries were part of San Francisco's first industrial and shipbuilding district, established in 1850 and 1851 along the line of First Street on the southern shoreline of Yerba Buena Cove, and stretching as far east as Rincon Point (Olmsted et al. 1977b:35; 1979:52). In fact, throughout the Gold Rush period and for many years thereafter, iron foundering represented San Francisco's leading industry (Lockwood 1978:78).

During the early 1850s, various shipbuilding and shipbreaking enterprises and foundries flourished along the shoreline in the vicinity of Rincon Point. Yet, development to the south of Market Street did not equal the intensity of that which was occurring to the north of Market Street, which at that time pushing out in all directions from the original townsite on Portsmouth Square. Early Gold Rush settlement south of Market Street tended to be concentrated along the shoreline near First Street and in the Rincon Point area.

It is ironic that a series of local disasters provided the impetus for San Francisco's ironworking industry. In 1849, the high cost of raw materials made iron foundering economically untenable in the city: but throughout 1850 and 1851, no less than six major conflagrations ravaged the town's commercial center, transforming much of San Francisco into a smoldering pile of rubble and ash (see Soule' et al. 1854:274-275, 329; Hittell 1878:133, 156-157, 168-169). These fires produced tons of scrap iron -- the remains of stoves, safes, prefabricated iron walls, and the like -- that could be purchased for next to nothing (Lockwood 1978:78). Seeing the opportunity, numerous entrepreneurs established small iron foundries and began turning worthless scrap metal into valuable finished goods (Lockwood 1978:78). These businesses flourished, and by 1853 seven iron foundries were in operation south of Market Street (Carlberg 1952:3). By 1875, the number had grown to forty-two (Lockwood 1978:78).

Once established, the South of Market foundries grew at a rapid pace and were soon supplying the entire West Coast of the United States with mining equipment, heavy machinery and other manufactured goods (Averbach 1973:198).

It should be noted that none of these mid-19th century foundries and related industrial facilities were situated within, or in direct proximity to the boundaries of the present subject property. Throughout the early Gold Rush era, the area in the vicinity of Tenth and Market streets remained largely isolated

from, and unaffected by, the principal South of Market settlement some three quarters of a miles to the east. Nevertheless, these industrial enterprises represented the earliest commercial activity within San Francisco's South of Market region. This mid-19th century industrial complex is worthy of mention because it stamped its indelible character upon the course of economic and cultural development throughout the entire South of Market region for the remainder of the 19th and early 20th centuries.

An 1852 or 1853 daguerreotype shows the state of development in an area approximately one half of a mile to the northeast of the present project site, near the location of the present day Moscone Convention Center at the corner of Fourth and Howard streets. Here, a scattering of small structures, mostly modest frame dwellings, can be partially identified among the South of Market area's rolling sand hills. Among the structures most clearly shown was Howard's Row -- four rather elaborate cottages that had been prefabricated in the eastern United States. However, it must be reiterated that none of this South of Market development extended anywhere near the boundaries of the present subject property.

Our first detailed graphic representation of the block bounded by Market, Mission, Tenth and Eleventh streets site is provided by the 1852 U.S. Coast and Geodetic Survey map of San Francisco. This invaluable research tool was made at a most opportune time, as it depicts the South of Market area shortly

after it was initially settled but before any significant alteration to the natural topography had occurred.

The 1852 Coast and Geodetic Survey map reveals that the present subject area remained in an almost completely natural state during the early Gold Rush era. Only a single, isolated structure is shown within the confines of the subject parcel, near the southeastern corner of the property, in a low-lying area near what today would be the intersection of Tenth and Mission streets. Two other small structures are shown nearby, but outside the boundaries of the present project area -- one near the corner of Eleventh and Mission streets, and the other located near what would be the line of Eleventh Street, approximately midway between Market and Mission streets. According to the data provided by the 1852 U.S. Coast and Geodetic Survey map, no other structures were at that time situated within an approximate radius of 200 meters of the present subject area.

Unfortunately, no data concerning the specific dimensions, architectural characteristics or the number, identity or occupation of the inhabitants of any of the structures located within, or immediately adjacent to the project area could be found in the body historical literature consulted in connection with the present research project. For example, a review of the various San Francisco city directories for the years between 1850 and 1853 provided no information regarding the people residing within, or immediately adjacent to, the project area. However,

given the isolated nature of the single structure located within the subject property, it is likely that this building served as a residence. In addition to the structure noted above, the 1852 U.S. Coast Survey map shows a footpath, or, perhaps, an unimproved dirt road, meandering from the line of Market Street toward the southeastern corner of the project area, near what today would be the intersection of Tenth and Mission streets. This path, which joined the Plank Road approximately 20-25 meters to the west of the single structure located near the intersection of Tenth and Mission streets, was clearly within the boundaries of the present subject property.

Other than the above described building and nearby footpath, there is no evidence of other occupation, topographic modification or development within any portion of the project area during the Early Gold Rush Period. As noted above, Market Street did not yet extend west of Fourth Street. Similarly, Tenth and Eleventh streets had not yet been delineated or constructed. Only the Plank Road (Mission Street), which connected San Francisco's rapidly expanding city center to the Mission, traversed the area in the vicinity of the southern perimeter the subject property.

A review of relevant archival sources confirms that San Francisco's Gold Rush building boom peaked in 1853 (Soule' et al 1854:497-501), to be followed by a serious economic depression and bank failures by 1855 (Hittell 1878:215-225). Nevertheless,

the young city's growth was too dynamic to be stopped entirely by these economic vicissitudes. as we shall see in greater detail below, the 1857 U.S. Coast and Geodetic Survey map of San Francisco shows a marked change in the level of development south of Market Street. New buildings were everywhere, and blocks that had been vacant just a few years before were now entirely developed.

It should be noted, however, that virtually all of the development noted in the preceding paragraph occurred well to the east of the present project area. The 1853 update of the U.S. Coast and Geodetic Survey map of San Francisco indicates no changes whatever from the above described situation depicted in the 1852 edition. Indeed, as we shall see in greater detail below, the block bounded by Market, Mission, Tenth and Eleventh streets remained in a relatively undeveloped state throughout the 1850s.

To conclude our treatment of the Early Gold Rush era, the body of available archival documentation suggests that the area in the vicinity of the intersection of Tenth and Market streets remained in an almost entirely undeveloped state throughout the Early American and Early Gold Rush periods. The 1852 U.S. Coast and Geodetic Survey map depicts a single structure existing near the southeastern corner of the subject property. In addition, a dirt footpath, or road, can be seen meandering through the project area toward the Plank Road. However, no other indication

of development, occupation or systematic utilization of the present project site could be adduced in the historical literature.

Given the existence of an early Gold Rush era structure near the southeastern corner of the project area, the possibility of encountering mid-19th century subsurface cultural resources of significance, or potential significance, must be considered. In the judgement of the present writer, the prospects of unearthing such significant, or potentially significant, archaeological remains within the confines of the subject area cannot be eliminated on the basis of available information.

For example, it should be noted that isolated 19th century structures, like the Gold Rush building shown by the 1852 Coast Survey map near the present day corner of Tenth and Mission streets, were often associated with privies, trash pits and/or wells. These facilities often served as the repositories of trash and household debris. Accordingly, in the judgement of the present writer, the discovery of early Gold Rush architectural remnants and/or an associated assemblage of cultural refuse, would represent a find of potential historical and archaeological significance. A discussion of the potential significance of such a cultural assemblage, as well as an assessment of the likelihood of encountering such remains within the confines of the present study area are presented at greater length below.

The Later Gold Rush Era (1853-1857)

By 1857, both Mission and Folsom streets were planked toll roads west of Third Street. At that time, Third Street had become the principal thoroughfare in the South of Market region. All of these busy streets were used by the Omnibus Line, which operated out of stables on Third Street, near the site of what today is the Moscone Convention Center today (e.g., Olmsted et al. 1977b:44-45). Between 1853 and 1857, Rincon Hill had developed into a desirable neighborhood of fine homes with views of the city and Bay. Also by 1857, signs of an increased, albeit a demonstrably more modest, level of development, utilization and occupation could be seen within, and immediately adjacent to the confines of the present project area near the intersection of Tenth and Market streets.

Our next detailed view of the present project area is provided by the 1857 U.S. Coast and Geodetic Survey map of San Francisco. This document depicts the subject property and its surroundings at the close of the Gold Rush era. Among other things, the 1857 U.S. Coast Survey map reveals that no systematic grading or topographic alteration had yet occurred within the confines of the project area. The property still consisted of a series of low-lying sand hills toward the southern portion of the parcel; these undulating tree and brush covered sand hills sloped upward toward the northern perimeter of the subject property.

By 1857, the line of Market Street had been delineated as far as Eleventh; in addition, the lines of Tenth and Eleventh streets, between Market and Mission, had been laid out. However, it must be stressed that construction of these three streets had not yet started anywhere near the confines of the present subject property. As of 1857, Market Street had not yet been extended beyond the approximate line of Fourth, while Tenth and Eleventh streets were nothing more than lines on planners' maps. Only the now venerable Plank Road (Mission Street) connected the structures in and around the present subject property with the more urbanized parts of San Francisco to the east and Mission Dolores to the southwest.

The 1857 Coast Survey map shows a total of nine structures existing within the confines of the present subject property. One relatively large structure is depicted near the present day intersection of Tenth and Mission streets. This structure may be an enlarged manifestation of the building depicted in approximately the same place by the 1852 and 1853 U.S. Coast Survey maps. Another relatively sizeable building was situated immediately north of the Plank Road, near the western boundary of the subject property.

The remaining seven structures were smaller in size than the two buildings described above; an examination of the 1857 U.S. Coast Survey map reveals that these edifices were scattered throughout the confines of the project area. It should be noted

that the meandering dirt road, or footpath, shown clearly on the 1852 U.S. Coast Survey map can no longer be seen in the 1857 edition.

In addition to the various structures depicted within the subject property, approximately two dozen other buildings were located nearby -- within an approximate radius of 100 meters of the present boundaries of the research area. In particular, a cluster of buildings existed near what today would be the intersection of Eleventh and Market streets. Unfortunately, as was the case with the 1852 and 1853 U.S. Coast Survey maps, no data concerning the specific dimensions, architectural characteristics or the number, identity or occupation of the inhabitants of any of the structures located within, or immediately adjacent to the project area could be adduced in the body historical literature consulted with regard to the present research project. For example, an examination of San Francisco city directories for the years spanning 1853 and 1857 revealed no relevant information regarding the people residing within, or immediately adjacent to, the project area.

Other than the above described structures, no other evidence of occupation, topographic modification or development within any portion of the project area during the course of the Later Gold Rush Period is provided by either the 1857 U.S. Coast Survey map or any of the other relevant archival sources.

To conclude our treatment of the Later Gold Rush Period, the body of available archival documentation suggests that the area in the vicinity of the intersection of Tenth and Market streets remained in a relatively undeveloped state throughout the entirety of the Later Gold Rush Period. The 1857 U.S. Coast and Geodetic Survey map of San Francisco depicts a total of nine structures existing at various locations within the confines of the subject property. However, no indication of grading or other topographic modification can be seen at the close of the Later Gold Rush era.

Given the existence of a variety of structures -- not to mention the possibility of associated cultural features -- within the boundaries of the project area during the Later Gold Rush Period, the possibility of encountering mid-19th century subsurface cultural resources of significance, or potential significance must be considered. In the judgement of the present writer, the prospects of unearthing such significant, or potentially significant, archaeological remains within the confines of the subject area can by no means be eliminated on the basis of available archival information. A discussion of the potential significance of any cultural remains that may be associated with the Later Gold Rush era, as well as an assessment of the likelihood of encountering such archaeological remains within the confines of the present study area are presented at greater length below.

The Later 19th Century Period (1858 - 1906)

By the close of the Gold Rush era, San Francisco had completed its rapid transformation from a booming frontier town into the principal urban center on the west coast of the United States. Langley's San Francisco City Directory for 1859 provides an apt description of the city's metamorphosis from village to metropolis:

> In 1859, this -- the metropolis of the Pacific -- numbers in population over 78,000 souls, and can boast of an assessment of more than $30,000,000... The discovery of Gold in 1848, gave an impetus to emigration from which San Francisco derived, in so short a period, the title of city. Her growth was sudden; there was no INFANCY to her history. An existence of only ten years has given her rank among the cities of the world; and after passing through the fiery ordeal and financial abuses and disasters, she is now in her onward march to wealth and greatness (Langley 1859:16).

By the close of the 1850s, San Francisco's South of Market area was filled with immigrants from both Europe and the east coast of the United States. Recently-arrived easterners dominated the professional classes south of Market Street. In addition, Irish and German immigrants swelled the ranks of the working classes, and German brewers started some of the area's the earliest industries, as well as monopolizing the ubiquitous corner grocery stores and saloons.

In must be noted, however, that in spite of intensive development and large scale population boom to the east of the Fifth Street during the 1850s, the present subject area remained

in a relatively undeveloped state throughout the decade. As noted previously, the 1857 U.S. Coast and Geodetic Survey map for San Francisco shows that the present project site was occupied by a relatively small number of scattered structures of varying shapes and dimensions. Not surprisingly, the 1859 edition of the U.S. Coast Survey map show no change from the situation depicted two years previously. Although, as we have seen, it was not possible to determine the precise architectural characteristics, dimensions or functions of the structures shown on the 1857 and 1859 U.S. Coast Survey maps, it is likely that most, if not all of the buildings existing within the confines of the project area during the second half of the 1850s, were small, wood-frame residences.

During the 1860s, population within the South of Market region continued to expand at a rapid pace. By 1861, a building boom had started that would continue unabated through 1869. The 1860 Federal Census reveals a mixed population living in the South of Market area. Working class neighborhoods quickly filled in the narrow cross streets of Natoma, Minna, Clementina, Tehama, Hunt, Sherwood and Ritch streets. The middle class tended to build larger homes along Mission, Howard and Folsom streets. The South of Market area's most prosperous residents sought the heights of Rincon Hill along Harrison and Second streets.

Unfortunately, a review of the 1860 Federal Census for the 10th Ward of San Francisco -- which encompasses the present

project area -- was of limited use with reference to the present study. For one thing, the methods used to collect and enumerate data for the 1860 census were often less than systematic. In addition, the census fails to provide specific street addresses for the residents of the 10th Ward. As a result of these methodological factors, coupled, perhaps, with the paucity of permanent residents within the confines of the present subject area in 1860, little useful information concerning the identities and occupations of the residents of the block bounded by Market, Mission, Tenth and Eleventh streets was adduced by an examination of the 1860 U.S. Federal Census.

At this point it should be noted that detailed treatments of the often complex social, demographic, economic and political trends occurring in the South of Market region during the 1860s and 1870s can be found in the following volumes: Yerba Buena Convention Center: Report on Historical Cultural Resources (Olmsted et al. 1977b), and Yerba Buena Center: Report on Historical Cultural Resources (Olmsted et al. 1979). However, it must be reiterated that during these decades the present study area was located at some distance to the west of the cultural activity documented in the works referred to above. For the most part, the block bounded by Market, Mission, Tenth and Eleventh streets was outside of and largely unaffected by (or at least, only tangentially affected by) the social and cultural activities taking place less than one-half mile to the east. Accordingly, other than citing the above referenced reports, no detailed

reiteration of the history and development of the South of Market region is necessary here.

Indeed, a systematic review of available archival sources produced little mention of the present subject parcel for the decade spanning the years 1860 and 1869. A systematic search of the local archival repositories produced few maps, photographs and/or oral accounts which might have shed light on the specific patterns of occupation and development within the block bounded by Market, Mission, Tenth and Eleventh streets during this decade. However, by all historical accounts of the South of Market region during the 1860s, the present project site developed slowly in comparison to those neighborhoods located to the east of Fifth Street. By the close of the 1860s, the project area and its immediate surroundings were still a sparsely developed area situated on the outskirts of San Francisco's downtown area.

The most detailed view of the block bounded by Market, Mission, Tenth and Eleventh streets during the 1860s is provided by the 1869 U.S. Coast and Geodetic Survey map of San Francisco. Unfortunately, the 1869 U.S. Coast Survey map is often difficult to interpret, since it was prepared in a schematic fashion and with much less detail than the 1852, 1853, 1857 and 1859 editions of this document. Still, it is a valuable research tool since, among other things, it depicts the actual topography of San Francisco at the time it was drawn, and not, as is the case with

some historical maps, projected development schemes and street alignments.

By the time of the appearance of the 1869 U.S. Coast Survey map, systematic grading activities were well underway within the confines of the project area. Among other things, Market, Mission Tenth and Eleventh streets appear to have been at least partially brought to grade by this time. Jessie Street, however, had not yet been formally delineated or constructed by the close of the 1860s.

According to the 1869 U.S. Coast Survey map, an unspecified number of structures were situated within only one portion of the subject property at the close of the 1860s. This was the area in the vicinity of the corner of Tenth and Mission streets where one or more buildings were located. The fact that no other structures are noted as existing within the confines of the project area at that time may be attributable to the fact that extensive grading and topographic modification was taking place within the project area at that time. However, it should be stressed that a review of the 1869 U.S. Coast Survey chart reveals that grading procedures had not been completed within the entirety of the project site by the close of the 1860s; the map clearly shows that the high dunes near the corner of Tenth and Market streets still remained had not yet been reduced and brought into conformity with city grade specifications.

During the 1850s, 1860s and 1870s, massive grading and filling activities took place throughout the South of Market area to level the region's many sand hills and to reclaim land from the waters of the bay, thus making way for commercial and industrial expansion. Hence, an understanding of the nature of filling and grading in and around the block bounded by Market, Mission, Tenth and Eleventh streets is essential to an understanding of the development of the present project area.

The first systematic grading activities within the South of Market region occurred during the Early Gold Rush Period. At first, fill, consisting primarily of rock, sand and assorted cultural refuse, was hauled by horse and cart to edge of the Bay (or other intended spot) and dumped. But the mammoth task of reclaiming the Bay and the low-lying areas south of Market Street quickly necessitated the use of more sophisticated techniques than these.

By 1852, a giant mechanical shovel (the so-called "Steam Paddy") had been put to use on the herculean task of leveling the sand dunes in the South of Market area. An 1867 photograph taken at the intersection of Eighth and Harrison Streets shows the "D. Hewes Steam Paddy Works" in operation. Historian J.S. Hittell describes the operation of this remarkable 19th century earthmoving machine:

> [The steam Paddy] at one move would dig up a cubic yard of sand or gravel (or nearly twice as much as could be hauled by a single horse and cart) and then swing it round by a crane over a railway car into which the load

> was discharged. The steam paddy was at work from 1852 till 1854, and from 1858 till 1873 almost constantly, sometimes moving two thousand five hundred tons a day, and for a while two were employed. The steam shovel could not work anywhere save in sand but there were five thousand acres of it that needed leveling (1878:438).

While, as we have seen, some grading had taken place south of Market Street during the early 1850s, most of the region's great sand hills were not systematically reduced until 1858. The excavated material was then taken by horse carts or railroad cars to the shoreline of the Bay and dumped into the diminishing waters of Yerba Buena Cove as fill.

David Hewes, the owner of the Steam Paddy, described the task he had undertaken:

> I commenced the work of grading Market Street at the corner of Third and Market, where a hill was nearly as high as the present Call Building, in the fall of 1858. I also proceeded, on the same plan, with the work of grading Market Street and filling in water lots on the south side of Market from Fremont to Steuart, which was the east line of the bay south of Market Street. When this was done, I began filling in the Bay on the north side of Market Street from Battery down to East, taking the material from Market Street between Third and Fourth, and the sand hills between Market and Mission. When this was completed, I took up my track and laid it down Fourth Street, from Market to King Street, filling Fourth and lots on the east and west side...
>
> I then took up my track and laid in down Fifth Street, filling that street from Market to King Street, and levelled the sandhills on the north side of Market Street, reaching up as far as Post Street, and on the east and west of Fifth Street. When Fifth Street and the adjacent lots on the other side were finished, I moved my track out to Seventh Street, doing the same on that street, from the head down into the bay, as I had done of Fourth and Fifth streets. From Seventh Street I moved to Ninth and to Tenth, doing the same work as on the other streets named until Mission Bay was filled

> in nearly to the line of its present improvement. My track took in about two miles in extent, in what is known as Hayes Valley, to Fourth and Townsend streets. I completed my contracting in filling in San Francisco Bay, and also Mission Bay in 1873 (Wheelan 1928:15).

The historical accounts provided above by Hittell and Wheelan tend to confirm the data provided by the 1869 U.S. Coast Survey map with regard to the approximate chronology of grading activities within, and immediately adjacent to the present study area. In brief, archival sources concur that grading activities within the present subject property commenced during the middle to later 1860s, and that this process of topographic modification was complete by the mid-1870s.

A comprehensive understanding of the nature and magnitude of cutting and/or filling is essential to an evaluation of the potential for encountering subsurface cultural deposits of significance, or potential significance, within the confines of the block bounded by Market, Mission Tenth and Eleventh streets. In San Francisco, the following formula can be utilized to approximate the amount of cutting or filling at any given location. All city grades were computed from zero base, which is 6.7 feet above the ordinary high tide mark on a pile at the boat stairs at the corner of Pacific and Davis streets: hence, the top of this wharf is 1.1 feet above city base, or 7.8 feet above the ordinary high tide mark (San Francisco Board of Supervisors 1900:16).

According to Municipal Order 648, the official grade for the intersection of Tenth and Market streets was set at 44 feet above city base, or 50.7 feet above the ordinary high tide mark (San Francisco Board of Supervisors 1900:182). The same municipal order decreed that the intersection of Mission and Tenth streets be graded to an elevation of 33 feet above city base, or 39.7 feet above the ordinary high tide-line ((San Francisco Board of Supervisors 1900:182). Municipal Order 2043 established the grade of Market Street, midway between Tenth and Eleventh streets, at an elevation of 43 feet above city base, or 49.7 feet above the ordinary high tide mark (San Francisco Board of Supervisors 1900:190). Finally, Municipal Order 2376 decreed that the elevation of Jessie Street, at a distance of 205 feet southwest of Tenth Street, be set at 43 feet above city base, or 49.7 feet above the ordinary high tide mark (San Francisco Board of Supervisors 1900:190).

The data presented in the preceding paragraph indicates that a limited amount of cutting was probably required to bring portions of the northern half of the subject property into conformity with established city base specifications. In all probability, most of this cutting occurred in the vicinity of the corner of Market and Tenth streets. By contrast, a relatively substantial amount of filling appears to have been required within the southern portion of the project site, particularly in and around the corner of Mission and Tenth streets.

It should be noted that the information provided above with regard to the nature and magnitude of 19th century grading procedures is in general accord with the findings of a series of geo-technical exploratory borings placed within the confines of the project area in 1989. These exploratory borings revealed that much of the project area was characterized by a 12-15 foot layer of sandy fill (e.g., Baseline Environmental Consulting 1994:20). In addition, it was noted that this fill layer contained an unspecified quantity of cultural debris "including nails, glass and burned wood" (Western Technologies Inc. 1989). It should be noted that the quantity, character or specific provenience of these cultural deposits were not assessed as part of the 1989 geo-technical explorations. Similarly, no attempt to evaluate the significance, or potential significance, of these cultural deposits was made during the course of the 1989 geo-technical investigations.

The above described pattern of topographic modification, coupled with the findings of recent exploratory geotechnical borings, strongly suggests that any subsurface cultural resources that may have existed within the southern half of the project site prior to the commencement of systematic grading operations in the 1860s and/or 1870s may well have survived the ravages often associated with extensive topographic alteration. In other words, any deposits of subsurface cultural resources associated with the Prehistoric/Protohistoric, Early Historic and/or Early Gold Rush periods that may have once existed within the confines

of the project area -- particularly within the southern half of the block bounded by Market, Mission, Tenth and Eleventh streets -- may still lie buried beneath a layer of later 19th century fill at one or more locations within the confines of the research area.

An 1878 Birdseye View of San Francisco, produced by Currier and Ives of New York (e.g., Olmsted et al. 1977a: Plate 4, opposite Page 46) clearly shows the block bounded by Market, Mission, Tenth and Eleventh streets toward the close of the 1870s. With the exception of Jessie Street, all of the thoroughfares bordering the study area are shown to be fully graded and open for traffic. According to this Birdseye View, the present project area contained a number of widely-spaced one and two-story wood-frame structures. It is appropriate to note that the crowding and congestion that was characteristic of so many South of Market neighborhoods during this period is clearly absent in the Currier and Ives Birdseye View. Unfortunately, it is difficult to determine the degree of precision with which this illustration characterizes the present project area and its immediate surroundings. In addition, the precise dimensions, architectural characteristics and/or specific functions of the depicted buildings cannot be determined from the above referenced illustration.

It should also be noted that the 1870 U.S. Federal Census for the 10th Ward of San Francisco has unfortunately been lost

from the archival record. Similarly, a review of the 1880 Federal Census for San Francisco's 10th Ward adduced no relevant information about the occupants of the present subject property. In general, however, the limited body of circumstantial information contained in the archival literature suggests that the present project area continued to grow at a steady, if rather slow, pace throughout the decades of the 1870s and 1880s.

For specific information regarding ownership of, and activities within, the present subject parcel during the final decades of the 19th century, we turn to a discussion of the Sanborn Fire Insurance Company's maps and city block books of San Francisco. The Sanborn maps represent an invaluable research tool, providing a relatively detailed picture of the type of businesses and buildings existing in the city from the final years of the 1880s well into the 20th century. The block books are also a useful source: although they do not indicate any specific structures or activities within the parcels they discuss, they do provide an accurate record of ownership. Thus, the next section of this report will be a discussion of the late 19th century Sanborn maps, as well as the information pertaining to property ownership gleaned from early block books.

The 1887 Sanborn Insurance Company Map

According to the 1887 Sanborn map, the present subject parcel was only moderately developed by the mid-1880s, with

sizeable portions of the project site remaining in an unimproved condition. For example, a large lot at the corner of Tenth and Market streets was still vacant at this time. Most of the development within the subject property at this time was concentrated within the northern half of the parcel.

A number of the structures existing within the approximate center of the project area in the mid-1880s were associated with the "Central Lumber and Mill Company." These associated edifices included several storage facilities, a headquarters/administration building, tool sheds, milling and planing facilities and a carpenters' shop. The Sanborn map also notes that the Central Lumber and Mill Company retained the services of 20 employees. The McAuliff & Company Coffin Factory, situated along Tenth Street near Jessie, was also situated within the confines of the subject property at this time.

According to the Sanborn map, only a few scattered structures were situated to the south Jessie Street. Although the Sanborn map does not identify the specific function of these buildings, it is not unreasonable to assume that some, if not all of these small, scattered structures may have been residences.

The 1894 Block Book

San Francisco block books for the late 19th century provide useful information regarding ownership and occupation of San

Francisco properties. The 1894 Handy Block Book of San Francisco is especially useful in that it indicates property ownership on a block-by-block basis, thereby making it relatively easy to determine the person, or persons, holding title to the present subject parcels during that year. The Handy Block Book for 1894 provides information regarding the division of lots and property ownership within the confines of the present project area. Unfortunately, this document does not provide data on individual structures or specific activities within any of the blocks it addresses.

In 1894, the block bounded by Market, Mission, Tenth and Eleventh streets was divided into a series of relatively large holdings, a situation reflected by the 1887 Sanborn Fire Insurance Company map. By this time, the lot identified by the street address of 1749 Market Street is depicted as "City Property." As we shall see in greater detail below, 1749 Market Street was the site of the San Francisco Fire Department's Engine Company No. 19 and Truck Company No. 3 during the final decade of the 19th century.

The 1899 Sanborn Insurance Company Map

The 1899 edition of the Sanborn map depicts the present project area at the close of the 19th century. By this time, the previously undeveloped lot at the corner of Tenth and Market streets is shown to be the location of the "Studebaker Mfg. Co.

and Carriage Repository." Also, as mentioned by the 1894 Handy Block Book, the San Francisco Fire Department's Engine Company No. 19 and Truck Company No. 3 were located along the line of Market Street, within the northwestern quadrant of the present subject area. The Central Lumber and Mill Company, with all of its various buildings and facilities, can still be seen occupying a large area within the approximate center of the project site. Indeed, the size and location of this lumber and milling facility appears unchanged the situation described above by the 1887 Sanborn map. Finally, the southern portion of the subject property -- the area situated below Jessie Street -- remains in virtually the same condition as that described by the 1887 Sanborn Fire Insurance Company map.

The present subject property played a role in the long and colorful history of the San Francisco Fire Department. Soule' et al., writing at the close of the Gold Rush era, commented upon the first attempts made by San Franciscans to organize a fire department:

> The first steps taken towards establishing a fire department, date from Christmas, 1849, the day after the first great fire. Meetings for that purpose were held by numerous influential citizens, who had been old Atlantic firemen, among whom were Frederick D. Kohler, David C. Broderick, George H. Hossefros, George W. Green, William McKibben, Benjamin Ray, Charles W. Cornell, John A. McGlynn, and others. In January, 1850, the councils first moved, by appointing F.D. Kohler chief engineer, with instructions to proceed to, permanently organize a suitable fire department. At that time, three engines were all the machinery that was to be found in the city, and those not properly provided with hose. Three companies, known as the **San Francisco**, **Empire** and **Protection**, were soon formed for each of these and brought into active service in the

> fires of May and June following. Before the last was well burned out, public notice was given for meetings to be held that very evening, to take measures properly to organize fire companies. It was evident that such conflagrations might be momentarily anticipated -- and what could three imperfectly provided companies do to arrest them. As a result of these actions, the fire department was regularly organized by organized by ordinance of councils, passed July 1st (1854:616).

Given the series of disastrous conflagrations that repeatedly ravaged San Francisco during the Gold Rush era, it is somewhat ironic that numerous local citizens -- including some of the most influential and educated people in the city -- were slow to recognize that fire represented a continuing danger to the city. This casual attitude about the danger of fire, and related views about the need for a well trained and equipped fire department can be seen in the following passage written in the mid-1850s:

> No one any longer apprehends any danger from fire to San Francisco. With fifty large public cisterns already constructed, others under way, and numerous other built by private individuals; with thirteen powerful and well supplied engines, and three hook and ladder companies, under the control of an average of nine hundred and fifty certificate members (who are by statute exempt for jury duty while members, and after five years' service, exempt for life), the most dangerous fire can be subdued (Soule' et al. 1854:618).

During the 1850s and 1860s, the fire department was sometimes viewed with a certain amount of ambiguity by the local citizenry, and occasionally described as less than effective in its efforts to keep the city safe from conflagration. As described in the following passage, San Francisco's many steep hills were one of the many factors that sometimes posed a substantial impediment to effective fire-fighting:

> A tragi-comic incident in 1856 when flames were detected at a suburban slaughterhouse demonstrated the consequences outside the city center. To reach this part of town, firemen had to haul their engines to the top of California Street hill and down to Larkin at the bottom. On the descent, the exhausted men could not keep their engines from running away. As a result, the equipment was damaged, the men narrowly missed a similar fate, and both reached the scene just in time to poke around the ashes (Lotchin 1974:180).

Nevertheless, in spite of its liabilities and problems, the fire department generally received and deserved high praise from the local citizenry; and from the rather humble beginnings described above, the modern San Francisco Fire Department developed into a highly efficient and professional organization. In his book entitled The Exempt Firemen of San Francisco: their Unique and Gallant History, Harry C. Pendleton described the history, character and current composition of Engine Company No. 19 at the turn of the century, only a half decade prior to the Great San Francisco Earthquake and Fire of 1906:

> Engine No. 19 is stationed at 1749 Market Street, and comprises nine men. It was originally Hose Company No. 5 and was transformed into an engine company in June, 1893. Its location then being on Waller Street between Octavia and Laguna Streets. The first members of Engine No. 19 were, foreman James Riley; engineer, William Douglas; driver, Dan Farren; stoker, William Geddes; assistant foreman, John Matheson; hoseman, Wm. Conners, Joe Zammitt, James Reed, W. Mulcahy, Thos. Bean, Joe O'Brien and Michael O'Neil. The present captain is H.F. Horn, a native of Stockton, Cal., where he was born June 14, 1859. He joined the fire Department July 1, 1855, as hoseman in Engine No. 5 In October 1885, he was transferred to Engine No. 13, and three years later became assistant foreman of that company. In July 1891 he was promoted foreman of Engine 18 and on May 1, 1897, was transferred to his present company as foreman.
>
> Engine 19 has seen considerable service. It has rendered yeoman's aid in fighting fires. John Cronin,

a former member, was killed at St. Rose's Academy by being struck by a line of hose whilst he was on a ladder and hurled to the ground. John Wilkinson met his death at another fire, and William Mulcahy was so seriously injured as to be incapacitated from further work, and is now on the pension roll.

The company has the best record for town drill at the Seventeenth Street tower, namely one minute forty-four seconds for 2 3/4 hose. The tower is said to be considerably higher than the drill tower at North Beach. The engine house is built of red brick and stands out conspicuously on Market Street between Tenth and Eleventh streets. It has two dormitories with all the usual conveniences, and is lighted by electricity and gas and steam heated throughout.

The engine in a second class metropolitan, and the hose wagon a Graves. Nine horses are stabled in the house in constant readiness for immediate use.

The house is headquarters of second assistant Chief Shaughnessy.

The other members of Engine No. 19 are lieutenant, John Matheson; engineer, S.P. Oppenheimer; driver, John Little; stoker, Charles Bryant; hoseman, Cornelius Keller, Henry Speckman, William Moenter and William Frodsam (1900:215).

Harry Pendleton's detailed account of the San Francisco Fire Department also provided an extensive description of the history, character and current composition of Truck Company No. 3 during the same period:

Truck Company No. 3 was organized in November, 1874, and went into service with a truck built by Leverich of Brooklyn, New York. It occupies the same house as Engine No. 19, at 1749 Market Street. The original members of the company were E, Brubaker, driver; M.M. Baker, tillerman; truckman, Martin Brown, M. Alimayer, S. Apell, Peter Flynn, Smith Wilkenson, W. Walters, J. Delaney, E. McKettrick, E. Lannigan, Jas. J. Maloney, Geo. Silvey and Peter R. O'Brien. In its time it has rendered signal service at innumerable fires that have occurred in the last quarter of a century, and has been engaged in all the notable fores of that period. On a third alarm the company takes in the whole of the business section of the city to the water front. The

captain is William Schultz who joined the department in 1886. He is a Native Son and hails from San Francisco, where he was born, November 19, 1864. He was first assigned to Hose No. 5, and in 1888 was transferred to Truck No. 3. He has stayed with the company ever since. For two years he was assistant foreman, and in June, 1897, he became foreman. Captain Schultz has twice been hurt in a fire. He was blown up at the burning of Thomas' Dye Works, and narrowly escaped mortal injury.

John Peralta, an erstwhile member of Truck No. 3, was killed November 11, 1893, through being overcome by heat and smoke at the fire at the Wisconsin and California Furniture Companies, King Street.

Michael Sheehan, who is now on the pension list, is another old-time member of this company, he having, on two separate occasions, been the unfortunate victim of a serious disaster when fighting a fire.

The truck is a third-class, straight frame, built by Larkins of Howard Street.

The other members of the company are Edward Kehoe, lieutenant; Michael Hannan, driver; Joseph Burnett, tillerman; truckman, Earnest Cameron, M. Fitzhenry, Wm. Hopkins, Archie Jensen, Thos. McGlynn and C.W. Higgins.

Thomas McGlynn was born in San Francisco, California, December 25, 1873; entered the department, December 12, 1895, Engine Company No. 28, and now ranks as truckman of Truck No. 3.

Archie Jensen was born in San Francisco, California, May 16, 1874; entered the department August 4, 1897, as a truckman of Truck No. 3 (Pendleton 1900:163-164).

As far as can be determined from a systematic review of the historical literature, relatively little new development or demographic change took place within, and immediately adjacent to the present subject property between the mid-1890s and the Great Earthquake and Fire of 1906. For example, the Handy Block Book of San Francisco for 1906, prepared just prior to the disastrous earthquake and fire of april 18, depicts a situation that was

basically the same as that shown on the 1899 Sanborn map and the 1894 Handy Block Book. By 1906, a few of the larger lots had been subdivided; however, with these minor alterations, the block remained as it had been during the previous decade.

The entire subject property was completely destroyed by the first day of the fire following the Great Earthquake of April 18, 1906 (Bronson 1959:frontispiece). Throughout virtually all of San Francisco's neighborhoods, including the present subject area, it could truly be said that the 19th century came to a cataclysmic conclusion.

Due to the fact that so many documents were lost in the Great Earthquake and Fire of April, 1906, there are substantial gaps in the existing archival record concerning the history of the present project area during the final years of the 19th century; accordingly, our knowledge of specific activities within, and adjacent to, the project site during this era remains somewhat incomplete. Nevertheless, a number of conclusions can be stated with relative certainty. It is known, for example, that the subject parcel was filled and graded at various points in time between the mid-to-late 1860s and the mid 1870s. Thereafter, the subject parcel was primarily devoted to commercial and industrial activities. The principal commercial facilities existing within the project area during the final two decades of the 19th century were the Central Lumber and Mill Company, located in the north-central portion of the property,

and an engine company of the San Francisco Fire Department, situated at 1749 Market Street. Several other commercial and/or industrial concerns were also situated within the northern half of the project area.

By contrast, the southern portion of the subject parcel--from line of Jessie Street south to Mission Street -- remained minimally developed throughout the final decades of the 19th century. The few scattered structures located within this part of the property may have been residences and/or small scale retail establishments -- i.e., grocery stores, restaurants and/or saloons.

Based upon a detailed evaluation of available archival sources, it is the judgement of the present writer that, given the type of structures that existed within the confines of the subject parcel -- as illustrated by the 1887 Sanborn map -- the possibility of recovering architectural remains, cultural features and/or related archaeological materials from the late 19th century is substantial. However, as shall be discussed in greater detail below, before being deemed of significance, or potential significance, any such late 19th century cultural resources would have to be specifically assessed in terms of their stratigraphic integrity, cultural characteristics and/or historical associations.

The Twentieth Century (1906 - Present)

In the aftermath of the Great Earthquake and Fire of April, 1906, San Franciscans began the daunting task of rebuilding their city. In some portions of the city, these renovation efforts proceeded with amazing rapidity. Such was not the case, however, within the confines of the present project area. To the contrary, archival sources indicate that the present subject property was unusually slow to rebuild. For example, the 1913 Sanborn Fire Insurance Company map shows the entire subject property to be vacant, except for a number of scattered lumber piles.

Our next detailed description of the project area is provided by the 1949 Sanborn map. At the close of the first half of the 20th century, the subject property contained a lumber yard, various lumber piles and a variety of structures -- mainly in form of one and two-story buildings. These structures contained a variety of small-scale commercial and retail enterprises, including a restaurant, a wrecking company, a sign painting enterprise as well as several other small companies.

During the second half of the present century, the project area assumed the characteristics and configurations by which it is known today. With these descriptive remarks, we will conclude our treatment of the 19th and 20th century history and development of the Tenth and Market Street site in San Francisco.

Conclusions and Recommendations

Based upon the findings of archival research, the following conclusions are offered regarding the potential existence of subsurface deposits of cultural resources of significance, or potential significance, within the present project site at the intersection of Tenth and Market streets in San Francisco. Available documentary evidence suggests that there is a possibility -- although by no means a confirmed certainty -- that prehistoric/protohistoric archaeological remains may exist, or may once have existed, at one or more locations within the confines of the subject property.

At the beginning of the historic era, the project area was situated in an area that bordered the waters of Mission Bay and Mission Creek. Previous archaeological research in San Francisco's South of Market region suggests that the present project area and its immediate surroundings would have represented a generally favorable habitat for Native American hunters and gatherers: before Euro-Americans altered the natural topography in the second half of the 19th century, Mission Bay, Mission Creek and Yerba Buena Cove teemed with a variety of floral and faunal resources.

In fact, we have seen that the various prehistoric sites recently discovered within the South of Market area (e.g., Pastron and Walsh 1988a, 1988b; Archeo-Tec 1988; Pastron 1990)

seem to have been deliberately located in places well suited for exploitation of the bountiful economic resources within this ecotone.

Before proceeding further, it must once again be stressed that while there is a possibility of encountering prehistoric and/or protohistoric cultural resources within the confines of the present study area, no firm evidence of the existence of such archaeological materials has been adduced. Hence, the conclusions presented above are intended to demonstrate a potential for the presence of such resources within the project area, based on informed speculation and comparative data.

One final point concerning the possible presence of prehistoric cultural resources within the present subject property needs to be addressed. As we have seen, much of the present project site was situated in a low-lying area which was filled between the 1860s and the mid 1870s. It appears, therefore, that any buried prehistoric/protohistoric cultural resources may still lie buried in a relatively intact state beneath the surface of the present project site. Indeed, as we have seen, the nearby Stevenson Street, Market Street and Yerba Buena shellmounds--CA-SFr-112, CA-SFr-113 and CA-SFr-114 -- were encountered within sites where extensive 19th century activities had substantially reduced the original topography. In all of these cases it would not have been unreasonable to assume that any buried prehistoric remains would have been completely destroyed by extensive 19th

century grading activities. Yet, in all cases the well preserved prehistoric deposits were encountered at depths ranging between 15-20 feet below present street grade. In other words, the prehistoric resources had been so deeply buried by drifting sands prior to the beginning of the historic era that they survived in spite of massive 19th century topographic alteration. In the case of the present subject property, which was mainly filled rather than cut, it seems reasonable to posit that any prehistoric/protohistoric cultural resources that once existed within the subject parcel may still remain intact at an unspecified depth beneath the present ground surface. In conclusion, in the judgement of the present writer, available data do not allow us to rule out the possible existence of significant, or potentially significant prehistoric and/or protohistoric subsurface cultural deposits within the site area.

Turning our attention to the historic era, all available evidence suggests that there is little likelihood of recovering cultural resources from the Spanish, Mexican, or Early American eras (1776 - 1848) within the confines of the present subject property. There is, however, a possibility that subsurface cultural resources of significance, or potential significance, associated with the Gold Rush and Late Nineteenth Century eras may exist within the confines of the project site.

Archival data indicates that between 1776 and the early Gold Rush era, the subject area remained in a completely natural

state, unoccupied and unexploited. With the population boom that accompanied the Gold Rush, the project area became gradually filled as development gravitated away from the original encampment of "Happy Valley" to include the entire South of Market district in the later 1850s. Following the completion of filling and grading activities in the 1860s and 1870s, the subject property continued to develop at a relatively slow pace. It is possible that architectural remains and/or related cultural features of significance, or potential significance, from the Gold Rush and/or late 19th century eras may exist at one or more locations within the confines of the subject property. Of these various historical eras, it is the judgement of the writer that cultural resources associated with the Early Gold Rush Period would, in all likelihood, present the greatest prospect for being deemed of historical significance. Any cultural deposits from the Later 19th Century era encountered within the project site would have to be carefully evaluated in terms of their stratigraphic integrity, cultural characteristics and/or historical associations before a determination of significance, or potential significance, could be made.

In light of the conclusions presented above, the following recommendations are offered for consideration. The possible presence of prehistoric/protohistoric and early Gold Rush archaeological resources within the project area warrants attention. Accordingly, prior to the commencement of construction activities within the research area, it is recommended that the

following program of archaeological testing and evaluation be implemented within the confines of the project area to determine the presence/absence of any prehistoric/protohistoric and/or historic period cultural resources existing within the confines of the subject property. If such subsurface cultural resources are identified, a second principal objective of the recommended archaeological testing program would be to ascertain the age, areal parameters, cultural characteristics, stratigraphic integrity and historical associations of the materials that have been encountered. Finally, the recommended program of pre-construction archaeological testing and evaluation would assess the significance of those subsurface cultural deposits that have been identified within the project area.

The recommended archaeological testing procedures would consist of the placement and systematic evaluation of a series of mechanical exploratory borings at selected locations within the subject parcel. The recommended research should be conducted under the supervision of a qualified archaeological consultant with documented expertise and experience in the investigation of both prehistoric/protohistoric and historic period sites in an urban setting. The selected consultant would be responsible for devising an appropriate testing methodology to be implemented within the project site, and would select the precise locations to be investigated during the program of archaeological exploration and evaluation.

Upon completion of field testing procedures, the designated archaeological consultant should conduct an appropriate program of laboratory analysis and interpretation upon any cultural materials that have been recovered. At the completion of the above described field and laboratory procedures, the Principal Archaeological Investigator should submit an appropriately detailed written report to the project sponsor which describes the findings of the pre-construction archaeological testing program, assesses the significance of any cultural resources recovered and proposes appropriate recommendations for any additional procedures deemed necessary for the further investigation of and/or mitigation of adverse impacts to those cultural resources of documented significance which have been detected within the confines of the present project area at the intersection of Tenth and Market streets.

In conclusion, the present Phase 1 archival cultural resources overview study would be incomplete without a final cautionary word. It remains possible that unanticipated cultural resources of significance, or potential significance, may be encountered during construction within the present subject property. Therefore, if during the course of construction on the present subject property, any such unexpected deposits of cultural materials of potential significance are encountered, it is recommended that all earthmoving activity in the area of impact cease immediately until a qualified archaeological consultant has been given an opportunity to examine the findings,

assess their significance and offer appropriate recommendations for the further investigation and/or mitigation of adverse impact to the cultural resources which have been uncovered.

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Maps and Charts

1852 U.S. Coast and Geodetic Survey Chart for San Francisco

1853 U.S. Coast and Geodetic Survey Chart for San Francisco

1857 U.S. Coast and Geodetic Survey Chart for San Francisco

1859 U.S. Coast and Geodetic Survey Chart for San Francisco

1869 U.S. Coast and Geodetic Survey Chart for San Francisco

1886 Sanborn Insurance Company Map of San Francisco

1899 Sanborn Insurance Company Map of San Francisco

1913 Sanborn Insurance Company Map

1949 Sanborn Insurance Company Map

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Mr. Thomas G. Conrad
Chief Planner, Technical Services Division
San Francisco Redevelopment Agency
770 Golden Gate Avenue
San Francisco, California 94102

13 July 1995

Dear Mr. Conrad:

Enclosed please find Archeo-Tec's report entitled **Draft Phase 1 Cultural Resources Overview Study for the General Services Administration Site Located at the Intersection of Seventh and Mission Street, San Francisco, California.**

At your request, I have delivered a copy of this report to Ms. Joan Byrens of the General Services Administration, and I have forwarded a copy to Chris Clark at Furgo West in San Luis Obispo. I look forward to hearing your comments regarding the enclosed document. If you have any questions, please do not hesitate to contact me at your convenience.

Sincerely yours,

Allen G. Pastron, Ph.D
President, Archeo-Tec Inc.

DRAFT PHASE 1 ARCHIVAL CULTURAL RESOURCES OVERVIEW STUDY FOR THE GENERAL SERVICES ADMINISTRATION OFFICE BUILDING SITE LOCATED AT THE INTERSECTION OF SEVENTH AND MISSION STREETS, SAN FRANCISCO, CALIFORNIA

Executive Summary

At the request of Mr. Thomas G. Conrad, Chief Planner of the Technical Services Division, San Francisco Redevelopment Agency, the staff of Archeo-Tec Inc., under the direction of Principal Investigator Allen G. Pastron, Ph.D, has completed a draft Phase 1 archival cultural resources overview study of the General Services Administration office building site at the intersection of Seventh and Mission streets, San Francisco, California. The research conducted in association with the present study consisted of a systematic review of the relevant historic literature and archival data base, including maps, photographs, oral accounts and other pertinent documentary sources at various local libraries, archival repositories and information centers.

A review of the relevant archival literature revealed that the subject property was situated in relatively close proximity to an ecotone -- an area of environmental transition -- during the late Prehistoric/Protohistoric Period. Further, several extensive, well preserved and significant prehistoric archaeological sites have recently been encountered and investigated in the general vicinity of the present study area within San Francisco's South of Market region. As such, the possible presence of significant, or potentially significance, subsurface prehistoric/protohistoric cultural resources within the confines of the subject property cannot, in the judgement of the Principal Investigator, be eliminated on the basis of available data.

By contrast to the findings adduced with regard to the Prehistoric/Protohistoric era, archival sources show little, if any, cultural activity occurring within the project area during the Spanish, Mexican and Early American historical eras. As such, there appears to be little possibility of encountering significant, or potentially significant, subsurface cultural resources from the early historic era within the project site.

In comparison to portions of the South of Market area situated to the east of Fourth Street, present subject property was relatively slow to develop during the Gold Rush era. For example, as far as can be determined from a review of available historical documents no evidence of systematic development or occupation within the project area had occurred by the height of the Gold Rush Period in the early 1850s. The first documented examples of development within the project area occurred during the Later Gold Rush era of the mid-1850s. The 1857 U.S. Coast and Geodetic Survey map of San Francisco shows several structures existing within the project area at this time. In all likeli-

hood, these buildings were associated with other cultural features -- i.e., wells, privies and/or trash pits. Although specific archival data are generally lacking, these mid-19th century structures probably served as residences. A review of archival data related to 19th century cutting, filling and other topographic alteration suggests that possibly intact cultural resources from the Later Gold Rush era may exist beneath the ground surface at one or more locations within the confines of the study area.

From the late 1860s, or early 1870s, until the turn of the century, the subject property was primarily devoted to residential uses. In addition, a few small-scale commercial ventures also existed at various locations within the project area during the final decades of the 19th century.

Following the Great San Francisco Earthquake and Fire of April, 1906, the present project area was rather slow to rebuild. For example, the 1913 Sanborn maps reveals that substantial portions of the property remained vacant fully seven years after the Great Earthquake and Fire. By the close of the first half of the 20th century, the present subject property assumed its present day configurations and characteristics.

One the basis of the data adduced during the course of the present Phase 1 archival cultural resources overview study, the following conclusions have been reached. Archival research suggests, although by no means confirms, that potentially significant subsurface cultural resources from the Prehistoric/Protohistoric Period, Later Gold Rush era and Later 19th Century Period may exist at one or more locations within the confines of the project area. Accordingly, a systematic program of pre-construction archaeological testing and evaluation is recommended. The principal goal of the recommended archaeological testing program would be to determine the presence or absence of subsurface cultural resources of significance, or potential significance, within the confines of the subject property. If such archaeological remains are encountered, corollary objectives of the recommended investigations would entail an assessment of the areal and temporal parameters, cultural characteristics and potential significance of those subsurface cultural resources that have been identified.

DRAFT

DRAFT PHASE 1 ARCHIVAL CULTURAL RESOURCES OVERVIEW STUDY FOR THE GENERAL SERVICES ADMINISTRATION'S' OFFICE BUILDING SITE LOCATED AT THE INTERSECTION OF SEVENTH AND MISSION STREETS, SAN FRANCISCO, CALIFORNIA

Prepared for:

Mr. Thomas G. Conrad
Chief Planner, Technical Services Division
San Francisco Redevelopment Agency
770 Golden Gate Avenue
San Francisco, California 94102

Prepared by:

Archeo-Tec Inc.
5283 Broadway
Oakland, California 94618
July, 1995

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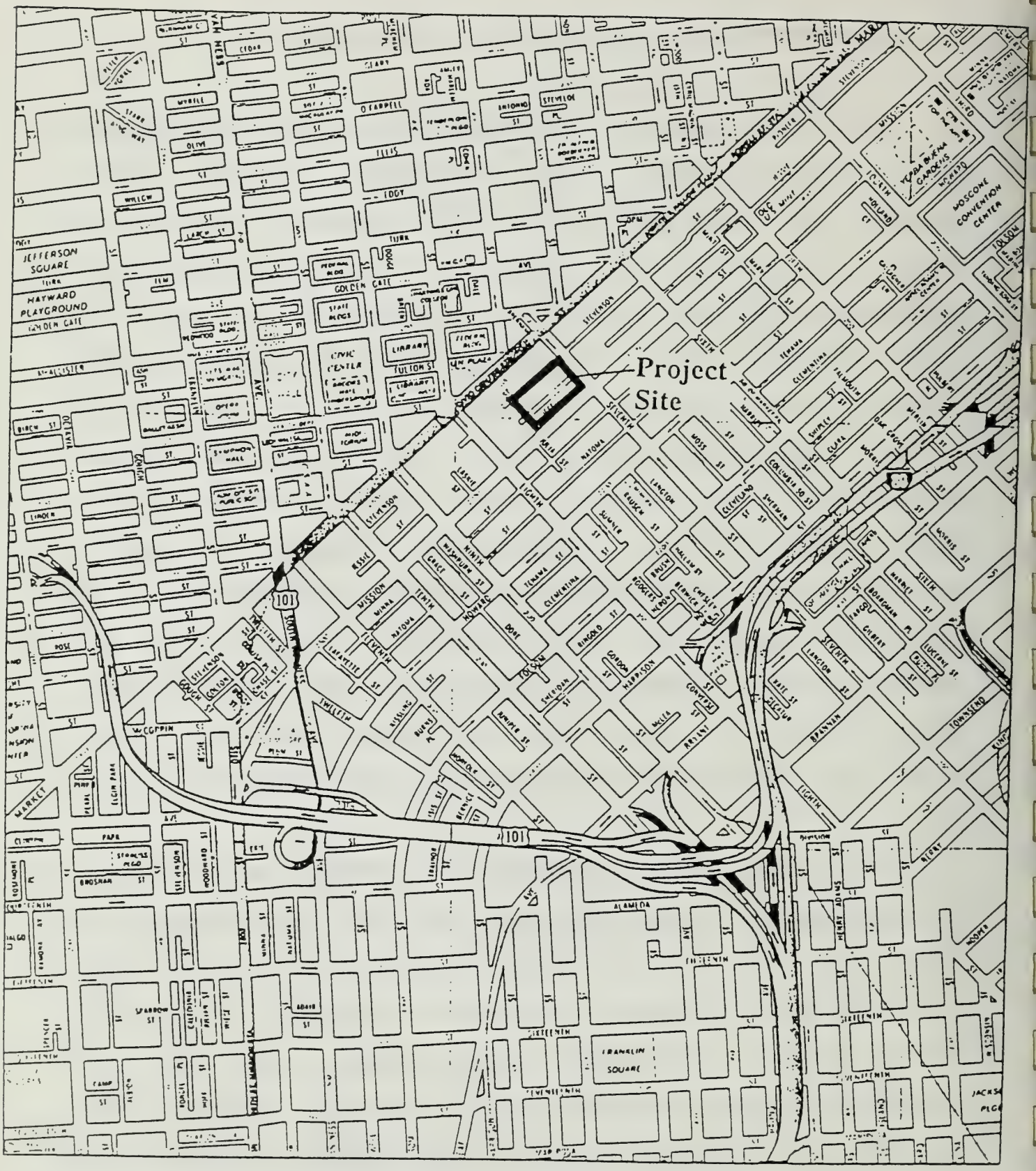
General Introduction, Site Location and Description

This report describes, interprets and evaluates the findings of a systematic Phase 1 archival cultural resources overview study of the Seventh and Mission Street site in the City and County of San Francisco, California. The 174,650 square-foot project site (350 feet by 499 feet) is located in San Francisco's South of Market region; it is bounded by Stevenson, Market, Mission, Seventh and Eighth streets (Figure 1). The subject property has been selected by the U.S. General Services Administration as an alternate site for the proposed construction of a federal office building. Located within Township 2S, Range 5W, as shown on the 1956 San Francisco North, California, USGS 7.5' topographic quadrangle (photorevised in 1968 and 1973), the subject property encompasses approximately four acres in total areal extent. The project area is situated less than one-half mile to the southeast of San Francisco's Civic Center Plaza.

The subject property is situated at an approximate elevation of approximately 35 feet above mean sea level. Specifically, the study area consists of two parcels with Assessor's Block 3702. Parcel 1, which is bounded by Stevenson Street on the north, Jessie Street on the south, Seventh Street on the east and a parking lot on west, contains Lots 5, 15 and 16. Parcel 2, which is bounded by Jessie Street on the north, Mission Street on the south, Seventh Street on the east and a vacant lot on the west, consists of Lots 29, 31, 32, 33, 34, 35, 36, 37 and 38 (Figure

REGIONAL LOCATION

Figure 1



Seventh Street/Mission Street Parcels
San Francisco, California

0 1500 Feet

BASELINE

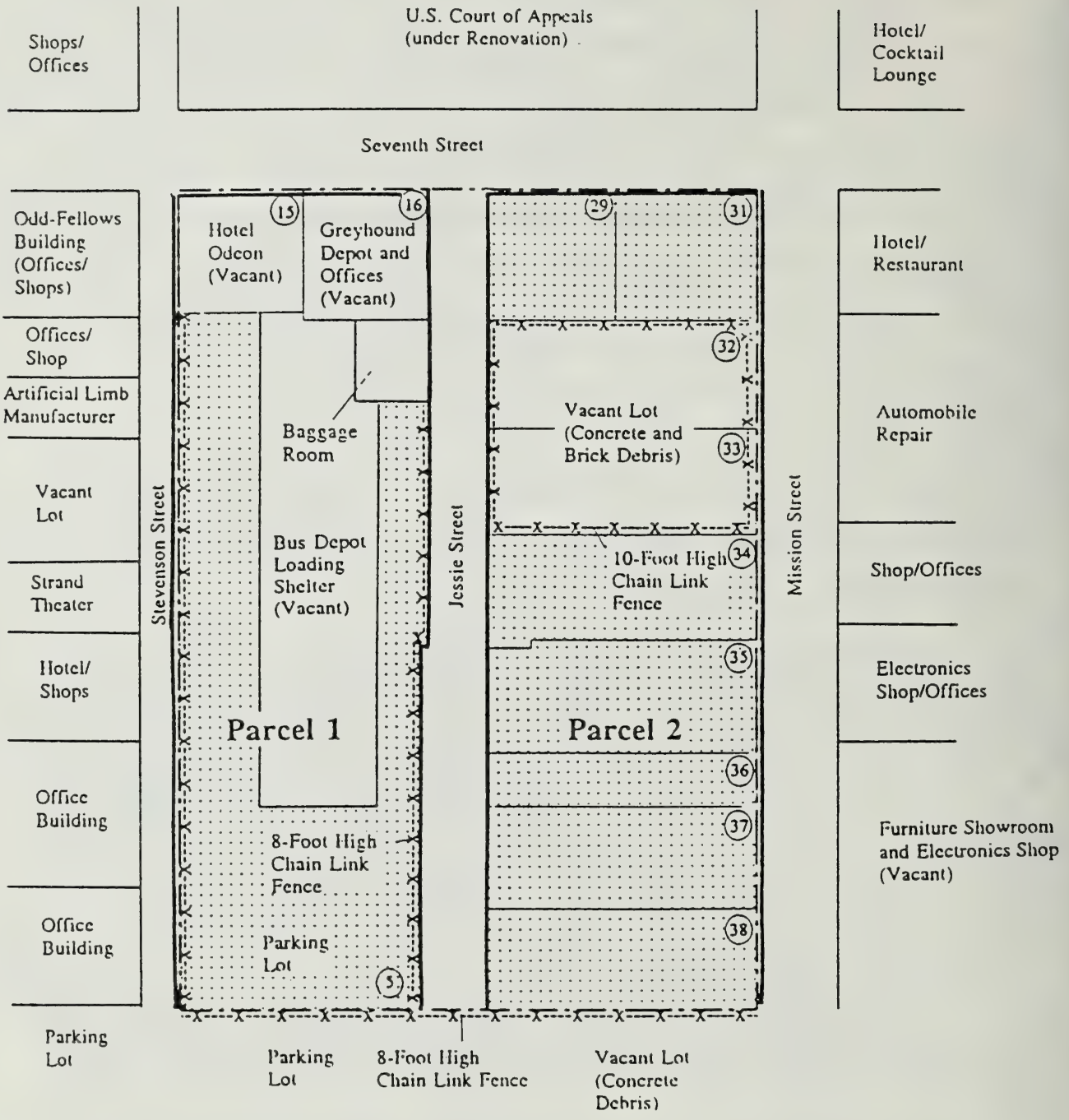
2). Jessie Street, running roughly along an east-west axis, bisects the project area and separates the two parcels from one another. Present day topography within, and immediately adjacent to the project area is generally level. However, as we shall see in greater detail below, the original topography in and around the project site has been altered substantially since the property was first graded during the second half of the 19th century.

In 1995, Baseline Environmental Consulting provided the San Francisco Redevelopment Agency with the following description of the subject property's current state:

> The western part of the site (Parcel 1) is dominated by three vacant buildings. At the corner of Seventh and Stevenson streets was a vacant five-story concrete building, the Hotel Odeon... The windows and entrances to this building are boarded up. Adjacent to the vacant hotel was a vacant four-story brick building, the former site of the Greyhound bus depot and offices. Behind the depot was a long one-story concrete and steel bus loading shelter... Entrances and windows at both the bus depot building and loading shelter were boarded up.
>
> The area around the bus loading shelter is used as a parking lot. The area is secured with an 8-foot high chain link fence, with a gate on Stevenson Street near the southwestern corner of the site to allow vehicle access...
>
> Jessie Street, a 30-foot wide asphalt city roadway, is the boundary between Parcels 1 and 2. The street was in poor condition, with numerous large cracks and potholes.
>
> The eastern portion of the site (Parcel 2) consists of two parking lots and one vacant lot... A small parking lot, measuring approximately 165 by 80 feet, was located at the corner of Seventh and Mission Streets. The surface of the parking lot was asphalt and concrete...

SITE PLAN

Figure 2



Legend

(5) Lot Numbers

Parcel Boundary

Parking Lots

Lot Boundary

Project Site Boundary

0 100 Feet

Seventh Street/Mission Street Parcels
San Francisco, California

BASELINE

> A vacant lot, measuring approximately 130 by 165 feet, was located south of the small parking lot... The lot was secured by a 10-foot chain link fence. The lot was covered with tall grasses and weeds. Visible exposed soil appeared light brown and sandy, similar to the surface soils described in a geotechnical report conducted near the site (Geomatrix 1992)...
>
> South of the vacant lot was a second parking lot, measuring approximately 285 by 165 feet, with vehicle access from Mission Street. The surface of the parking lot was asphalt, and in poor condition... (Baseline Environmental Consulting 1995:4).

The archival research conducted in connection with the present Phase 1 cultural resources overview study was conducted by the staff of Archeo-Tec Inc., under the direct supervision of Principal Investigator Allen G. Pastron, Ph.D. The work was authorized and performed at the request of Mr. Thomas G. Conrad, Chief Planner of the Technical Services Division for the San Francisco Redevelopment Agency.

The archival research conducted in association with the present Phase 1 cultural resources overview study had three primary objectives:

> 1) to adduce and describe relevant data pertaining to the history and development of the study area and its surroundings, including patterns of prehistoric/protohistoric and historic period settlement and land use, the nature of industrial, commercial and residential growth in and around the project area and the range of social and economic activities that took place within, and adjacent to the project site;
>
> 2) To determine with the greatest degree of specificity possible whether prehistoric/protohistoric and/or historic period cultural resources of demonstrated or potential significance existed within the confines of the subject property; and

3) to formulate and recommend appropriate measures and procedures to further investigate and/or mitigate the adverse impacts of proposed construction activities to significant, or potentially significant, surface and/or subsurface cultural resources existing within the confines of the project area.

Given the project objectives delineated above, the main text of this report presents a chronological history of the project sire and its surrounding, based upon a systematic examination of available archival documentation, pertaining to historical development within the block bounded by Market, Mission, Seventh and Eighth streets.

The historical summary presented in the following pages is based on a review of available maps, photographs, oral accounts and other documentary materials on file at the Bancroft Library at the University of California, Berkeley, the California Historical Society in San Francisco, the California Archaeological Inventory's Northwest Information Center at Sonoma State University in Rohnert Park, the Archaeological Research Facility of the University of California at Berkeley, the San Francisco Redevelopment Agency, the Mechanic's Institute Library in San Francisco and the library of Archeo-Tec Inc. in Oakland.

As will be seen below, the history of the project site was primarily a residential neighborhood during the second half of the 19th century. In addition, some retail businesses and small-scale commercial establishments were situated within the confines of the subject property during this era. With the presentation

of these introductory remarks, we shall now present the findings of the archival historical evaluation of the proposed Seventh and Mission Street project area.

The Natural Setting

Before discussing patterns of demography and economic and ·ial development within the confines of the present project area, it is appropriate to briefly consider the site and its immediate surroundings in their natural state, before human habitation and construction irrevocably altered the original landscape.

A glance at the 1852 U.S. Coast and Geodetic Survey Map for San Francisco reveals that prior to later 19th century filling and grading activities, the block bounded by Market, Mission, Seventh and Eighth streets was situated amidst a series of brush-covered, undulating sand hills, less than one-half mile to the north of the edge of marshlands that extended beyond Mission Creek and Mission Bay. Elevations within the project area ranged from a minimum of roughly 15 feet above mean sea level to a maximum of about 40-50 feet above mean sea level.

The 1852 U.S. Coast and Geodetic Survey map depicts no structures existing within the project area. The only evidence of occupation or systematic utilization of the site at that time was a dirt track, or footpath, which can be seen meandering

through the subject property. It should also be noted that in 1852, only one of streets bordering the project area had been delineated or constructed. This was the Plank Road, later to be called Mission Street which, as we have seen, borders the project area on the south. At that time, Market Street did not extend west of Third and Seventh, Eighth and Stevenson streets did not yet exist.

As we have seen, the entire subject property consisted of a series of undulating sand hills situated in relatively close proximity to the marshes bordering Mission Creek and Mission Bay. As such, the present study area and its immediate surroundings can be said to represent an ecotone -- a transitional area between two adjacent ecological communities -- composed in this case of marshlands and adjacent sand dunes and associated vegetation.

Unfortunately, there is little available archival information concerning specific types of native vegetation within the present subject area; no specific information concerning this subject is provided by the 1852 U.S. Coast and Geodetic Survey map or other archival documents pertaining to the early historic era. Nevertheless, historic photographs, drawings and early written accounts of San Francisco and its environs confirm that the South of Market area was covered by undulating sand dunes which were, in all likelihood, characterized by the same varieties of flora found throughout most of the northern San Francisco

peninsula -- mainly grasses, scrub brush and an occasional stand of oak trees or willows (e.g., Davis 1889:76).

Early European explorers marveled at the rich environment of the San Francisco Bay region. The area's marshes, like those which surrounded Mission Creek, had a particular abundance of both flora and fauna. Many early writers commented upon the seemingly inexhaustible numbers of both marine and terrestrial mammals, fish, shellfish and waterfowl (e.g., La Perouse 1794; Crespi 1927). For example, in 1833, George C. Yount offered a typically glowing appraisal of the unparalleled bounty of San Francisco Bay and its surroundings:

> ...animals were numerous beyond all parallel -- In herds of many hundreds they might be met, so tame that they would merely remove to open a way for the traveler to pass -- They were lying or grazing in immense herds on the sunny side of every hill, and their young like lambs, were frolicking in all directions -- The wild geese and every species of waterfowl darkened the surface of every bay and firth, and upon the land, in flocks of millions they wandered in quest of insects & cropping the wild oats which grew there in richest abundance -- When disturbed... the sound of their wings was like that of distant thunder -- The rivers were literally crowded, with salmon... It was literally a land of plenty -- and such climate as no other land upon the face of the earth can boast of... (Camp 1966:123).

This plethora of natural resources supported a thriving Native American population for thousands of years prior to the arrival of the first Euro-American immigrants (e.g., Kroeber 1925; Levy 1978; Moratto 1984; Chartkoff and Chartkoff 1984, Archeo-Tec 1990).

Prehistoric/Protohistoric Period (Ca. 6000 B.C. - 1775 A.D.)

The first task of the present archival cultural resources overview study was to determine the potential for encountering archaeological resources from the Prehistoric/Protohistoric Period within the confines of the present study area. When the Spanish first explored Northern California in the last quarter of the 18th Century, the region possessed what has been described as "the densest Indian population anywhere north of Mexico" (Margolin 1978:1). It has been estimated that between 7,000 and 10,000 Native Americans inhabited the naturally bountiful coastal area between Monterey County's Point Sur and the San Francisco Bay (Kroeber 1925:464; Margolin 1978:1).

Native American shellmounds -- massive heaps of ash, shell and cultural refuse -- once dotted the shoreline of the San Francisco Bay. Kroeber offers the following observation regarding the extensive archaeological heritage of the region:

> The entire Costanoan frontage on ocean and bay is lined with shell deposits. San Francisco Bay in particular is richer in such remains than any other part of the State, except perhaps the Santa Barbara Islands (1925:466).

When University of California archaeologist Nels C. Nelson conducted the first intensive archaeological survey of the region between 1907 and 1908, he recorded no less than four hundred and twenty-five shellmounds on or near the shoreline of the Bay (Nelson 1909, 1910a). Today, extensive and ongoing development

has badly eroded this once impressive archaeological record. Relatively few Native American shellmounds or other types of prehistoric sites have been systematically investigated by archaeologists, and many basic research questions pertaining to the complex prehistory of the San Francisco Bay region remain unanswered for lack of first-hand data. Because of this, any reasonable opportunity to identify and study even a remnant of an aboriginal shellmound in the San Francisco Bay area must be deemed a potentially significant scientific event.

Given this preamble, we now turn our attention to the evidence at hand for the present project site. The first place to search for the presence of documented archaeological resources in the San Francisco Bay area is the archives of the California Archaeological Inventory's Northwest Information Center, located on the campus of Sonoma State University in Rohnert Park. Additional documentation regarding the prehistoric/protohistoric record of the San Francisco Bay region was consulted at the Archaeological Research Facility of the University of California, Berkeley. A systematic review of the records on file at these archival repositories reveals that no prehistoric/prehistoric cultural resources have been recorded within the confines of the present subject property. However, this absence of data can almost certainly be attributed to the fact that the subject property has never been the object of a formal archaeological survey.

It should be noted that a number of prehistoric sites have been recorded in the South of Market area within a one mile radius of the present project area. Analysis of the locations and characteristics of these prehistoric deposits, particularly an evaluation of their proximity to the marshes bordering Mission Bay and Mission Creek, suggests that similar prehistoric cultural materials may exist within, or adjacent to, the present subject property at the intersection of Seventh and Mission streets.

Until the mid-1980s, most of the known prehistoric sites in San Francisco were located in the Hunters Point -- Islais Creek area, several miles to the south of the present subject property. The largest and most important of these is CA-SFr-7 (Nelson's Shellmound # 387), variously referred to as the Crocker Mound, the Bayshore site, and Johnson's Landing. Site CA-SFr-7 is located near Hunters Point, between three and four miles to the south of the present project area. A review of N.C. Nelson's unpublished manuscript, on file at the Archaeological Research Facility, University of California, Berkeley, revealed the following about the location and environmental setting of SFr-7:

> The mound lies of the northern edge of the lagoon and extends beyond the present branch out into the bay (Nelson 1910b: Manuscript # 11).

According to Nelson's site record, CA-SFr-7 at one time covered an area of approximately 60 feet north to south and 230 feet east to west. The mound was excavated by the staff and students of the University of California, Berkeley, in 1910.

Recovered cultural materials included 60 artifacts, 23 human burials and a small historic period crucifix, at depths ranging between two and eight feet below the contemporary ground surface. Upon examination of the archaeological collection, Kroeber remarked that the "Artifacts obtained agree closely on the whole with those previously secured on the eastern shore of the bay" (1911:227). Most local archaeologists generally agree that unspecified portions of CA-SFr-7 remain undisturbed beneath the ground surface in the general vicinity of present day Candlestick Park (Banks 1981a, 1981b; Rudo 1982).

Several other prehistoric sites have been noted in and around Hunters Point. One of these is CA-SFr-17, exposed during the excavation of a garden plot in the U.S. Marine housing project near the intersection of Alemany and Bayshore boulevards in 1951. The site record reveals that the mound was found on an old sand dune in immediate proximity to a marsh (site survey records on file at the Archaeological Research Facility, University of California, Berkeley). A contemporary newspaper article provides the following additional information regarding this site:

> [A] skeleton was found by J.C. Hoeger... while digging in his backyard. He found an old stone pestle near the skull and assumed that the remains were those of an Indian. A native resident said that some 20 years ago when Gavin Street was being built seven skulls and many Indian relics were found. According to police several bodies have been found in the area before, and it is presumed to be the site of an old Indian burial ground (San Francisco Call Bulletin, February 21, 1951).

Until relatively recently, many local archaeologists and historians tended to accept the assumption that intensive urban development in and around downtown San Francisco had probably resulted in the destruction of most, if not all, of the prehistoric/protohistoric sites that once existed in the area. Nonetheless, in the late 1970s, three prehistoric sites -- CA-SFr-29, CA-SFr-30 and CA-SFr-31 -- were encountered and investigated within the grounds of Fort Mason (Baker 1978). In addition to the finds made at Fort Mason, a deeply buried aboriginal skeleton was previously unearthed on the grounds of the U.S. Army Presidio (Heglar and Moratto 1973). However, it must be noted that all of these sites were found in an a part of San Francisco that had not been subject to intensive urbanization or development over the years, a fact that seemed directly related to the preservation of these prehistoric/protohistoric archaeological resources.

In addition to the sites discussed above, recent archaeological work in San Francisco reveals that numerous relatively intact prehistoric deposits may be scattered throughout other parts of San Francisco, particularly within the South of Market area. These South of Market deposits are situated in relatively close proximity to the present subject property. Research indicates that all of these deposits were deeply buried beneath the region's sand dunes long before the beginning of the historic era. Hence, they were hidden from N.C. Nelson when he conducted his pioneering archaeological survey of the San Francisco Bay

area. For the most part, these sites are buried deep enough below the present ground surface to have been spared the impacts of more than a century of intensive development.

For example, the discovery of a fragmentary human skeleton in October, 1969, during the course of excavation at the BART Civic Center station, and the subsequent analysis of the remains, points out the possibility of the existence of deeply buried prehistoric finds throughout San Francisco. The human remains were found about 75 feet below present grade, 26 feet below the mean sea level, and 14 feet above the bottom of a 40-foot layer of clay/silt underlying the sand characteristic of the 1852 surface topography (Kelly 1976:45; Olmsted et al. 1979:42). Radiocarbon dating places the bones at a surprisingly early 2950 ± 250 years B.C. This radiocarbon date is the oldest in Central California for human remains (Henn and Schenck 1970; Henn et al. 1972).

Another prehistoric/protohistoric site situated to the south of Market Street CA-SFr-2, is located on the south side of Harrison Street, west of Third Street, and only approximately three quarters of a mile from the present project site. This prehistoric deposit (Nelson's Shellmound # 439) was encountered during construction work in 1929; it has been described as follows:

> The lot between two buildings was being excavated by steam shovel. On April 18, the work had ceased in order to brace the walls of the two adjacent buildings. The base of the shell deposit is 10 feet below street

> level. The deposit was about four feet thick, but may once have been deeper, as remains of an old building were resting on top of the deposit which probably had been cut away for the floor of the building. Underlying the shell deposit was black loam mostly and in one place yellow sand. An hour's scrutiny of the cuts through the deposit revealed no artifacts. Shell was very abundant, and there were pockets of whitish gray and yellow ash. Bird bones were fairly numerous and a few mammal bones were obtained. All of the specimens are cataloged as 1-27097 [at U.C. Berkeley's Lowie Museum of Anthropology]. More or less charcoal was visible in lumps. No human remains had been encountered by the steam shovel men. The same is true with regard to artifacts. Cooking stones were abundant (Site record for CA-SFr-2, perhaps written by E.W. Gifford, on file at the Lowie Museum of Anthropology, U.C. Berkeley).

As noted above, a good deal of charcoal was encountered, but none was saved, since in those days, before the introduction of radiocarbon dating, no data could be extracted from it. Hence, there are no C-14 dates from this particular site. SFr-2 is believed to have been totally destroyed after being investigated by E.W. Gifford of the University of California at Berkeley (Kelly 1976:45).

Another example of a deeply buried find of prehistoric/protohistoric age and character was encountered within San Francisco's South of Market area in 1977 at the northwest corner of Third and Folsom streets -- the site of the present day Moscone Convention Center -- when an exploratory boring encountered an obsidian scraper of undoubted aboriginal manufacture: this artifact was recovered from a depth of between 18 and 20 feet (Pastron 1978:210). While only an isolated specimen, this find points to the fact that unrecorded prehistoric archaeological

materials do indeed exist at various locations throughout San Francisco.

Before 1986, the last shellmound encountered in what today is downtown San Francisco was the above discussed SFr-2. However, in the Summer of 1986, the staff of Archeo-Tec discovered and excavated two deeply buried, previously unrecorded prehistoric shellmounds in San Francisco's South of Market district. These sites, now officially designated CA-SFr-112 and CA-SFr-113, are respectively located near the intersections of First and Mission streets and Fifth and Market streets. Both deposits, located in close proximity to the shoreline of the Bay, appear to have been buried by drifting dune sand prior to the beginning of the historic period and were therefore not recorded by Nelson or subsequent archaeological researchers. Both sites were found to be reasonably intact at the time of their discovery.

Based on an analysis of artifact typology, coupled with radiocarbon and obsidian hydration evaluations, it was determined that CA-SFr-112 was intermittently inhabited between A.D. 400 and A.D. 900, while the more ancient CA-SFr-113 appears to have been occupied between 100 B.C. and A.D. 100 (Pastron and Walsh 1988a, 1988b).

It should also be noted that one other previously unrecorded prehistoric site, the Yerba Buena Shellmound (CA-SFr-114), was

encountered by the staff of Archeo-Tec Inc. along the line of Howard Street, Between Third and Fourth streets in the summer of 1988 (e.g., Archeo-Tec 1988). The site was intensively excavated in the spring and summer of 1989 (e.g., Archeo-Tec 1990; Pastron 1990). The Yerba Buena Shellmound was much more extensive than the previously discussed CA-SFr-112 and CA-SFr-113, and contained a well preserved village/cemetery complex. Radiocarbon dates and associated data indicate that this site was occupied between the beginning of the Christian era and approximately A.D. 750 (Archeo-Tec 1990:57). The site yielded a rich and informative cultural assemblage including eleven human burials. As of this writing, the extensive body of archaeological data recovered from CA-SFr-114 is being analyzed, interpreted and prepared for publication.

The three recently discovered prehistoric archaeological sites in San Francisco's South of Market area were apparently located in places convenient for the exploitation of both maritime and littoral resources. One of these sites -- i.e. CA-SFr-113 -- appears to have been little more than transient encampment; on the other hand, the other two deposits -- CA-SFr-112 and particularly CA-SFr-114 -- appear to represent sizeable villages that had been occupied, at least intermittently, for substantial periods of time.

In any event, the presence of a multiplicity of deeply buried prehistoric deposits in one of the most intensively

developed parts of San Francisco points to the strong possibility that other unrecorded archaeological deposits of similar, or even earlier age, may exist in various places throughout San Francisco, particularly the South of Market area. It is obvious that one cannot reasonably assume that intensive development and urbanization must inevitably result in the destruction of underlying prehistoric archaeological resources. Given the ever increasing evidence that the present subject property and its surroundings in the South of Market region may have situated within an ecotone favorable for intensive Native American habitation, it is the judgement of the present writer that prudence must be exercised when considering the possible presence of previously undocumented prehistoric archaeological deposits within the confines of the proposed subject property.

With specific regard to the block bounded by Market, Mission, Seventh and Eighth streets, it is of some interest to note that the property was originally situated in relative proximity to the interface of the wet and dry environmental zones, may have represented a favorable setting for encampments of aboriginal hunters and gatherers. In this regard, it is useful to cite N.C. Nelson's discussion concerning the wide variety of environmental settings in which aboriginal shellmounds were located:

> [Shellmounds were] situated in a great variety of places; but, on the whole, the positions may be characterized as "convenient" rather than in any sense "strategic." Many of the largest mounds are located at the head of the sheltered coves (such as the Bayshore Mound -- CA-SFr-7), yet not a few deposits lie in

> thoroughly exposed places, out on the bluff and higher headlands. Occasionally a hillside, with or without any accommodating shelf or hollow, has been chosen, doubtless on account of some small spring issuing in the vicinity... Some mounds are found in apparently unnatural situations, such as on the plain where no streams pass, or out in the salt-marsh, where fresh water could not be had, [but] normally shellheaps lie close to sea level. The fact is that nearly all the mounds lie within fifty feet of the surface of the bay water... but exceptions occur, [some] mounds lie very far above the normal zone... [and] at least ten of the known deposits extend below sea level [for example, the Bayshore Mound, CA-SFr-7, and the Ellis Landing Mound in the city of Richmond, on the eastern shore of the bay] (Nelson 1909:328-329).

To conclude, it seems reasonable to state that the absence of documented prehistoric archaeological resources does not, in and of itself, by any means eliminate the possibility of encountering such materials within, or in close proximity to, the subject property. As we have seen, only a fraction of the total number of prehistoric/protohistoric sites in San Francisco were ever systematically recorded; for by the time the first serious researchers arrived on the scene, the City had already been extensively developed. Recent research has demonstrated that many sites were simply covered over rather than destroyed: and in addition to the sites recently encountered in downtown San Francisco there are numerous examples in the annals of archaeology of prehistoric/protohistoric remains being casually blanketed by fill and built upon during the dynamic advances of a youthful urban center, only to be unexpectedly discovered years, or even centuries later, in the midst of construction or other topographic modification.

In conclusion, while archival sources provide no specific evidence to indicate that prehistoric/protohistoric cultural resources exist at one or more locations within the confines of the present study area, it is the judgement of the present writer that the possible existence of such archaeological materials within the project site cannot be conclusively eliminated on the basis of the historical data presently available for consideration.

Spanish and Mexican Periods (1776 - 1845)

Available archival data suggest that the chances of encountering cultural materials from the Spanish or Mexican periods within the confines of the block bounded by Market, Mission, Seventh and Eighth streets are rather limited. Between the appearance of the first Spanish ship to sail through the Golden Gate in 1775 (the San Carlos under the command of Lieutenant Juan Bautista de Ayala) and the mid-19th century discovery of gold at Sutter's Mill, population and maritime traffic in the San Francisco Bay were extremely limited. The principal centers of Spanish, and later Mexican activity in the region were the Presidio and Mission Dolores, both located a considerable distance from the present project site.

From the founding of the Mission and the Presidio in 1776 to the beginnings of Yerba Buena village (the original townsite of the City of San Francisco) in 1835, it appears unlikely that

there was any systematic occupation or use of the present project site and/or its immediate surroundings. Indeed, as we shall see in greater detail below, this demographic situation remained largely unchanged until well after the start of the Gold Rush in the mid-19th century. However, it should be noted that infrequent activity associated with Mission Dolores or the various ranches scattered throughout the region might have brought people to the immediate surroundings of the present project site from time to time.

Most of the documentary sources concerning the early historic era in the San Francisco Bay region indicate that the Spanish were anything but vigorous in exploring or exploiting the economic potential of their newly acquired domains in Northern California.

> Communication among the... establishments in the Bay Area was entirety by land during the early period, although the Bay offered an alternative means of travel. The failure of the Spanish even to provide themselves with small boats that could be used for voyages on the Bay greatly surprised G.H. Von Langsdorff, the physician who accompanied Count Nicolai Rezenov on his famous visit to the Presidio of San Francisco in 1806 (Scott 1959:13).

From 1838 onward, Mission Dolores was accessed from the hamlet of Yerba Buena (as San Francisco was known then) by a sandy, unimproved dirt road. The following quote from historian J.S. Hittell vividly describes the necessity of an improved road from the city to the mission:

> The road was much needed, because the ordinary route to the mission, which was substantially the only place of

> resort outside the city, was very sandy, sinuous and difficult to travel - at one place making a great bend in order to avoid a broad ravine of quagmire or bog between the present lines of Seventh & Eighth (Hittell 1897:341).

This roadway was eventually planked in the early 1850s (Soule' et al. 1854:298) -- hence its name, Plank Road. As noted above, this thoroughfare eventually became known as Mission Street. It seems reasonable to assume that some carriage or horse traffic might have frequented the immediate surroundings of the present subject property. The literature also notes that there were occasional excursions to the then uninhabited South of Market area during the 1835 - 1845 period for hunting, picnicking and community celebrations. For example, William Heath Davis, one of San Francisco's pioneering residents, recalled the activities of a man named Daniel Sill -- the operator of the local grist mill -- in the year 1839:

> While employed as miller he was fond of going out Sunday mornings for a little hunt. I was often invited to accompany him. We would start about nine o'clock and go over to a place called Rincon, a flat between Rincon Hill and Mission Bay and a resort for deer, the place being covered with a thick growth of scrub oak and willows, which afforded them good shelter. Presently, perhaps four or five deer would appear in sight, and Sill, drawing his old rifle to his shoulder, always got one (1889:27).

The area described by Davis probably included that part of the South of Market region called "Pleasant Valley" during the Gold Rush era. This area was situated between Howard, Folsom, First and Second streets. This area lay approximately one quarter of a mile to the east of the present subject area, and

although firm data are lacking in the historical literature, it is possible that periodic recreational sojourns like those described above may have brought people into the vicinity of the present study area (Davis 1889:27, 66).

To summarize, although the immediate surroundings of the project site may have been occasionally visited, there is no data in the historical record to suggest any systematic occupation or use of the land within, or immediately adjacent to, the present project site prior to the start of the Gold Rush. In all likelihood, any subsurface cultural remains within the present project area attributable to this period would be limited to individual items lost or discarded in a generally unfrequented place.

As mentioned above, throughout the Spanish/Mexican era, the Mission was located more than a mile to the southwest of the proposed project site, and although it is possible that activities of the Mission may have passed by or extended into the project site from time to time, it is unlikely that such activities would have left an impression in the archaeological record. According to historian J.S. Hittell, 1813 marked the peak of activity at the Mission. In that year, the Indian inhabitants of the mission numbered 1,205; in addition, there were 9,270 head of cattle, 10,120 sheep, 622 horses and a product of 6,114 bushels of grain (Hittell 1878:67). By contrast, H.H. Bancroft determined that 1820 was the apex of the Mission's population, when a

total of 1,252 Indian neophytes were registered on church rolls (Bancroft 1886: volume 2, 374).

If it is unlikely that the activities of the Mission would have had anything more than a casual impact on the present subject parcel, then it is even more unlikely that the Presidio would have left an impression, for this Spanish/Mexican era establishment was located a full three miles away. To reiterate, available archival data indicate that there is little likelihood of encountering cultural resources of demonstrated or potential significance from the Spanish/Mexican Period within the confines of the present subject property within the block bounded by Market, Mission, Seventh and Eighth streets.

Early American and Early Gold Rush Periods (1846 - 1852)

The date of July 8, 1846, marked the conversion of the hamlet of San Francisco from Mexican to American jurisdiction. On this day, a landing party from the sloop-of-war Portsmouth, under the command of Captain John B. Montgomery, waded ashore at the town of Yerba Buena and raised the stars and stripes to the top of the flagpole in the town's dusty plaza, thereby claiming California for the United States. At the time, San Francisco's two hundred permanent residents occupied some fifty buildings scattered throughout the Yerba Buena Cove area (Soule' et al. 1854:173).

Following the American seizure of California, the town of Yerba Buena began to grow with what has been called "wonderful rapidity" (Soule' et al. 1854:173). By April 1, 1847, Yerba Buena contained a total of 79 buildings which have described as follows:

> twenty-two shanties, thirty-one frame houses, and twenty-six adobe buildings. In the course of the subsequent five months, seventy-eight new tenements were erected, viz: forty-seven of frame, eleven of adobe, and twenty shanties. About this time, the permanent population had increased to nearly four hundred (Soule' et al. 1854:173-174).

In 1847, Jasper O'Farrell, a civil engineer and newly appointed city surveyor, laid out the basic grid plan for the streets of San Francisco, expanding on a previous survey performed by J.J. Vioget in 1838 (Hittell 1878:86). O'Farrell delineated hundreds of "water lots" -- parcels of land along Yerba Buena cove that were at least partially exposed during periods of low tide. Throughout 1847, many of these water lots were sold at auction, mainly to real estate speculators, and often at prices ranging between $ 50.00 and $ 100.00 apiece (Watkins and Olmsted 1976:23). Thus, the stage was set for the explosion of landfilling which, beginning in 1849, would push the edge of the San Francisco waterfront well to the east of Montgomery Street (e.g., Dow 1973).

In 1848, on the eve of the California Gold Rush, San Francisco's population, now grown to a total of slightly more than eight hundred individuals, occupied approximately two

hundred structures (Soule' et al. 1854:200). Within a few short months, the city by the Bay was to undergo one of the most dramatic and unprecedented explosions of population and building ever recorded in the annals of human affairs. With the advent of the Gold Rush, the sleepy hamlet of Yerba Buena disappeared forever. However, it should be noted that the information presented in the preceding paragraphs is intended only as general background. As discussed above, there is no evidence that any of the cultural activities occurring in the vicinity of the Yerba Buena settlement during the Early Historic Period encroached upon, or had any impact whatever, within the confines of the present subject property near the corner of Seventh and Mission streets. As far as can be determined by a systematic review of available archival sources, the vicinity of the present subject area remained in a completely natural state throughout the entirety of the Early American Period.

San Francisco's dynamic development during the Gold Rush years has been thoroughly documented in the historical literature (see, for example, Barry and Patten 1873; Beilharz and Lopez 1976; Borthwick 1857; Davis 1889; Hittell 1878, 1882; Lewis 1966; Lotchin 1974; Lockwood 1978; Olmsted et al. 1977a:265-278, 1977b:42-52; Olmsted et al. 1979:59-84; Pastron 1985; Schwendinger 1984; Soule' et al. 1854; and Wirth Associates 1979a, 1979b); accordingly, a detailed summary of this historical watershed is unnecessary here. Suffice it to say that within months of the discovery of gold in the Sierra Nevada foothills, the once

sleepy, inconsequential hamlet of San Francisco was transformed overnight into what has been called an "instant city" (Lockwood 1978).

The city's population was not officially counted in 1849, but it had increased dramatically. "The number of inhabitants was estimated to be two thousand in February, three thousand in March and five thousand in July" (Hittell 1878:147). By November, according to Hittell, the city's population was slightly less than eight thousand individuals (Hittell 1878:148). Soule' et al., on the other hand, remark that by the end of 1849, San Francisco's population numbered at least "twenty, and probably nearer twenty-five thousand souls" (1854:244).

The population boom accompanying the Gold Rush prompted the first settlement and development of the South of Market area. There had been no structures existing to the south of Market Street before 1849, with the possible exception of the buildings belonging to the Bernal Rancho, in an area far to the south of the present project area (e.g. Olmsted et al 1981:35-41). By the close of 1849, however, "Happy Valley," an early encampment for adventurers who were awaiting the opportunity to journey to the gold fields, was nestled among the sand dunes to the south of Market Street, extending westward from the bay shoreline near what today is the intersection of First and Mission streets. Happy Valley, situated some three quarters of a mile to the east of the present project area, was first filled up with tents, then

with frame houses. Several contemporary accounts vividly depict the boisterous character of Happy Valley during the first heady months of the Gold Rush:

> A part of the city worthy of notice is Happy Valley so called -- a large collection of tents pitched in a valley near the beach which may contain two thousand inhabitants, mostly new comers waiting to go to the mines... These locate in Happy Valley wherever they see fit. Any attempt to collect rent (there have been several such attempts made) is rejected as absurd. There appears to be a regular FREE SOIL movement carried out into pretty effectual operation, for half a mile above there any piece of land large enough to pitch a decent sized tent will rent for a very high price. In the valley, a variety of trades are carried on and there are a number of small shops with the sale of small articles and liquor (Caughey 1941:29).

Among the most extensive and detailed reminiscences of life in Happy Valley during the Gold Rush era are those of Samuel C. Upham, who arrived in San Francisco via Cape Horn early in August, 1849. On August 6, Upham made his initial arrangements to settle himself ashore:

> In the afternoon I visited the encampment of the golddiggers in Happy Valley, for the purpose of selecting a site on which to pitch my tent. On the following day I moved my luggage ashore, and located myself among the sojourners there. My provisions and mining implements were soon landed from the OSCEOLA, and I made the necessary arrangements for spending a few weeks in San Francisco as comfortably as possible...
>
> San Francisco -- formerly called Yerba Buena -- is a queer place. It contains at this time a dozen <u>adobe</u> structures and perhaps two hundred roughly-constructed frame buildings... The beach, Happy Valley, for the space of two miles, is covered with canvas and rubber tents, and the adjacent sand hills are dotted to their summits with these frail but convenient tenements of the prospective miner. The population, numbering perhaps five thousand, is as heterogeneous as their inhabitants. It seems as though every nation on the face of the earth had sent a representative to this place, and that they had all arrived with their

> credentials. Such a medley of languages and jargon of tongues the world has seldom seen. It is a modern Babel (Upham 1878:218-222).

Upham soon left San Francisco for the mines of the Sierra Nevada foothills, but returned in November. His comments on the rapid changes taking place in San Francisco in the Fall of 1849 provide a rare first-hand view of a city in metamorphosis:

> San Francisco, during my absence of two months, had become so changed that I scarcely recognized it. Substantial frame buildings had superseded frail canvas tenements, and piers had been extended many hundred yards into the bay, at which vessels from the four quarters of the globe were discharging their cargoes. I visited the gold-diggers' encampment, Happy Valley, but that too was so changed, that I could hardly recognize a familiar spot or countenance. A three story warehouse was being erected on the spot where I had pitched my tent two months previously. The saw and hammer of the carpenter could be heard in every square, and the voice of the crier and auctioneer at the corner of nearly every street. The plaza was covered with booths, in which could be had the merchandise of all nations (Upham 1878:257-259).

Just before he left California in August, 1850, Upham once again commented upon the state of development within Happy Valley:

> Happy Valley, which four months previously, contained scarcely half a dozen frame buildings, now boasted as many hundreds. Verily, this EL DORADO is a wonderful country; and San Francisco, despite clouds of dust and chilly afternoons, is destined to become the second city of this continent. Farewell, San Francisco! (Upham 1878:357).

Upham, writing in the 1870s from both diary entries and personal recollections, erred in some of the particulars regarding that state of progress of Happy Valley in late 1849 and 1850.

Nevertheless, his account vividly conveys the dynamism, growth and excitement characteristic of San Francisco during the initial year of the California Gold Rush.

By the time the 1852 U.S. Coast and Geodetic Survey map of San Francisco was published, the South of Market area was dotted with buildings, the greatest concentration of which were centered in the vicinity of First and Mission streets. The "gnarled oaks and thick underbrush" that had characterized the South of Market landscape in its natural state (Soule' et al. 1854:238) had, for the most part, been stripped away for use as fuel in the city's domiciles and at the numerous little foundries that had sprung up in Happy Valley and Rincon Point. These little foundries were part of San Francisco's first industrial and shipbuilding district, established in 1850 and 1851 along the line of First Street on the southern shoreline of Yerba Buena Cove, and stretching as far east as Rincon Point (Olmsted et al. 1977b:35; 1979:52). In fact, throughout the Gold Rush period and for many years thereafter, iron foundering represented San Francisco's leading industry (Lockwood 1978:78).

During the early 1850s, various shipbuilding and shipbreaking enterprises and foundries flourished along the shoreline in the vicinity of Rincon Point. Yet, development to the south of Market Street did not equal the intensity of that which was occurring to the north of Market Street, which at that time pushing out in all directions from the original townsite on

Portsmouth Square. Early Gold Rush settlement south of Market Street tended to be concentrated along the shoreline near First Street and in the Rincon Point area.

It is ironic that a series of local disasters provided the impetus for San Francisco's ironworking industry. In 1849, the high cost of raw materials made iron foundering economically untenable in the city: but throughout 1850 and 1851, no less than six major conflagrations ravaged the town's commercial center, transforming much of San Francisco into a smoldering pile of rubble and ash (see Soule' et al. 1854:274-275, 329; Hittell 1878:133, 156-157, 168-169). These fires produced tons of scrap iron -- the remains of stoves, safes, prefabricated iron walls, and the like -- that could be purchased for next to nothing (Lockwood 1978:78). Seeing the opportunity, numerous entrepreneurs established small iron foundries and began turning worthless scrap metal into valuable finished goods (Lockwood 1978:78). These businesses flourished, and by 1853 seven iron foundries were in operation south of Market Street (Carlberg 1952:3). By 1875, the number had grown to forty-two (Lockwood 1978:78).

Once established, the South of Market foundries grew at a rapid pace and, seemingly overnight, these enterprises were soon supplying the entire West Coast of the United States with mining equipment, heavy machinery and other manufactured goods (Averbach 1973:198).

It should be noted that none of these mid-19th century foundries and related industrial facilities were situated within, or in direct proximity to the boundaries of the present subject property. Throughout the early Gold Rush era, the area in the vicinity of Seventh and Mission streets remained largely isolated from, and unaffected by, the principal South of Market settlement between one-quarter and one-half mile to the east. Nevertheless, these industrial enterprises represented the earliest commercial activity within San Francisco's South of Market region. This mid-19th century industrial complex is worthy of mention because it stamped its indelible character upon the course of economic and cultural development throughout the entire South of Market region for the remainder of the 19th and early 20th centuries.

An 1852 or 1853 daguerreotype shows the state of development in an area approximately one quarter of a mile to the northeast of the present project site, near the location of the present day Moscone Convention Center at the corner of Fourth and Howard streets. Here, a scattering of small structures, mostly modest frame dwellings, can be partially identified among the South of Market area's rolling sand hills. Among the structures most clearly shown was Howard's Row -- four rather elaborate cottages that had been prefabricated in the eastern United States. However, it must be reiterated that none of this South of Market development extended anywhere near the boundaries of the present subject property.

Our first detailed graphic representation of the block bounded by Market, Mission, Seventh and Eighth streets site is provided by the 1852 U.S. Coast and Geodetic Survey map of San Francisco. This invaluable research tool was made at a most opportune time, as it depicts the South of Market area shortly after it was initially settled but before any significant alteration to the natural topography had occurred.

The 1852 Coast and Geodetic Survey map reveals that the present subject area remained in an almost completely natural state during the early Gold Rush era. No structures are shown within the confines of the subject parcel. At that time, the closest buildings to the present project area were four small, scattered structures situated on both sides of Plank Road, between the lines of present day Fifth and Sixth streets: another group of four small, scattered buildings existed on both sides of Plank Road immediately to the west of the line of what today is Eighth Street. According to the data provided by the 1852 U.S. Coast and Geodetic Survey map, no other structures were at that time situated within an approximate radius of 100 meters of the present subject area. In 1852, the vast majority of the buildings existing within the South of Market region were situated to the east of Fourth Street.

Unfortunately, no data concerning the specific dimensions, architectural characteristics or the number, identity or occupation of the inhabitants of any of the structures located in close

proximity to the project area could be found in the body historical literature consulted in connection with the present research project. For example, a review of the various San Francisco city directories for the years between 1850 and 1853 provided no information regarding the people residing in immediate proximity to the present study area. However, given the isolated nature of those structures located in the vicinity of the subject property, it is likely that these buildings were residences.

While no buildings are shown within the confines of the project area in 1852, the Coast Survey map does depict a footpath, or, perhaps, an unimproved dirt track, meandering through the northeastern corner of the subject area, near the present day corner of Stevenson and Seventh streets.

Other than the above described footpath, or dirt track, the historical literature makes no mention of other occupation, topographic modification or development within any portion of the project area during the Early Gold Rush Period. As noted above, Market Street did not yet extend west of Fourth Street. Similarly, Seventh, Eighth and Stevenson streets had not yet been delineated, much less graded or constructed. Only the Plank Road (soon to called Mission Street), which connected San Francisco's rapidly expanding city center to Mission Dolores, traversed the area in the vicinity of the southern perimeter the subject property.

A review of relevant archival sources confirms that San Francisco's Gold Rush building boom peaked in 1853 (Soule' et al 1854:497-501), to be followed by a serious economic depression and bank failures by 1855 (Hittell 1878:215-225). Nevertheless, the young city's growth was too dynamic to be stopped entirely by these economic vicissitudes. as we shall see in greater detail below, the 1857 U.S. Coast and Geodetic Survey map of San Francisco shows a marked change in the level of development south of Market Street. New buildings were everywhere, and blocks that had been vacant just a few years before were now entirely developed.

It should be noted, however, that virtually all of the development noted in the preceding paragraph occurred well to the east of the present project area. The 1853 update of the U.S. Coast and Geodetic Survey map of San Francisco indicates no changes whatever from the above described situation depicted in the 1852 edition. Indeed, as we shall see in greater detail below, the block bounded by Market, Mission, Seventh and Eighth streets remained in an almost completely undeveloped state throughout the 1850s.

To conclude our treatment of the Early Gold Rush era, the body of available archival documentation suggests that the area in the vicinity of the intersection of Seventh and Mission streets remained in a virtually undeveloped state throughout the Early American and Early Gold Rush periods. The 1852 U.S. Coast

and Geodetic Survey map depicts no structures existing within the confines of the subject property. Only an unimproved dirt footpath, or road, can be seen meandering through the northeastern corner of the subject, near the present day intersection of Stevenson and Seventh streets. However, no other indication of development, occupation or systematic utilization of the present project site could be adduced in the historical literature.

Given the apparent absence of any systematic development or occupation within the subject property during the early Gold Rush era, the possibility of encountering mid-19th century subsurface cultural resources of significance, or potential significance, appear to be limited.

The Later Gold Rush Era (1853-1857)

By 1857, both Mission and Folsom streets were planked toll roads west of Third Street. At that time, Third Street had become the principal thoroughfare in the South of Market region. All of these busy streets were used by the Omnibus Line, which operated out of stables on Third Street, near the site of what today is the Moscone Convention Center today (e.g., Olmsted et al. 1977b:44-45). Between 1853 and 1857, Rincon Hill had developed into a desirable neighborhood of fine homes with views of the city and Bay. Also by 1857, the first signs of development, utilization and occupation could be seen within, and

immediately adjacent to the confines of the present project area near the intersection of Seventh and Mission streets.

Our next detailed view of the present project area is provided by the 1857 U.S. Coast and Geodetic Survey map of San Francisco. This document depicts the subject property and its surroundings at the close of the Gold Rush era. Among other things, the 1857 U.S. Coast Survey map reveals that no systematic grading or topographic alteration had yet occurred within the confines of the project area. The property still consisted of a series of undulating, tree and brush-covered sand hills ranging in elevation between 15-50 feet above mean sea level.

By 1857, the line of Market Street had been delineated as far as Eleventh; in addition, the lines of Seventh and Eighth streets (then called Harris and Price streets, respectively), between Market and Mission, had been laid out. However, it must be stressed that neither grading nor construction of these three streets had not yet started in immediate proximity to the confines of the present subject property. As of 1857, Market Street had not yet been extended beyond the approximate line of Fourth, while Seventh and Eighth streets were nothing more than lines on planners' maps. Only the now venerable Plank Road (Mission Street) connected the structures in and around the present subject property with the more urbanized parts of San Francisco to the east and Mission Dolores to the southwest.

The 1857 Coast Survey map shows a total of three structures existing within the confines of the present subject property. One relatively large structure is depicted near the approximate center of the parcel. A smaller structure was situated at the present day intersection of Seventh and Mission streets. Finally, another small structure was located on the north side of Mission Street, near the western boundary of the present subject area. It should also be noted that the meandering dirt road, or footpath, shown clearly on the 1852 U.S. Coast Survey map can no longer be seen in the 1857 edition.

In addition to the various structures depicted within the subject property, approximately two dozen other buildings were located nearby -- within an approximate radius of 100 meters of the present boundaries of the research area. For the most part, these nearby structures were situated along the line Mission Street. However, it should be stressed that as of 1857, the bulk of settlement and development in the South of Market region was concentrated east of Fourth Street, roughly one-quarter of a mile to the east of the present subject property.

Unfortunately, no data concerning the specific dimensions, architectural characteristics or the number, identity or occupation of the inhabitants of any of the structures located within, or immediately adjacent to the present project area could be adduced in the body historical literature consulted with regard to the present research project. For example, an examination of

San Francisco city directories for the years spanning 1853 and 1857 revealed little, if any, relevant information regarding the people residing within, or immediately adjacent to, the project area.

Other than the above described structures, no other evidence of occupation, topographic modification or development within any portion of the present project area during the course of the Later Gold Rush Period is provided by either the 1857 U.S. Coast Survey map or any of the other relevant archival sources consulted in connection with the present cultural resources overview study.

To conclude our treatment of the Later Gold Rush Period, the body of available archival documentation suggests that the area in the vicinity of the intersection of Seventh and Mission streets remained in a relatively undeveloped state throughout the entirety of the Later Gold Rush Period. The 1857 U.S. Coast and Geodetic Survey map of San Francisco depicts a total of three small, scattered structures existing at various locations within the confines of the subject property. However, no indication of grading or other topographic modification can be seen at the close of the Later Gold Rush era.

Given the existence of at least three structures within the boundaries of the project area during the Later Gold Rush Period, the possibility of encountering mid-19th century subsurface

cultural resources of significance, or potential significance must be considered. In the judgement of the present writer, the prospects of unearthing such significant, or potentially significant, archaeological materials within the confines of the subject area can by no means be eliminated on the basis of available archival information. In addition, it should be noted that mid-19th century structures, like the Gold Rush buildings shown by the 1857 Coast Survey map near the present day corner of Seventh and Mission streets, were often associated with privies, trash pits and/or wells. These facilities often served as the repositories of trash and household debris. Accordingly, in the judgement of the present writer, the discovery of early Gold Rush architectural remnants and/or an associated assemblage of cultural refuse, would represent a find of potential historical and archaeological significance.

A discussion of the potential significance of such a Later gold rush era cultural assemblage, as well as an assessment of the likelihood of encountering such archaeological remains within the confines of the present study area are presented at greater length below.

The Later 19th Century Period (1858 - 1906)

By the close of the Gold Rush era, San Francisco had completed its rapid transformation from a booming frontier town into the principal urban center on the west coast of the United

States. Langley's San Francisco City Directory for 1859 provides an apt description of the city's metamorphosis from village to metropolis:

> In 1859, this -- the metropolis of the Pacific -- numbers in population over 78,000 souls, and can boast of an assessment of more than $30,000,000... The discovery of Gold in 1848, gave an impetus to emigration from which San Francisco derived, in so short a period, the title of city. Her growth was sudden; there was no INFANCY to her history. An existence of only ten years has given her rank among the cities of the world; and after passing through the fiery ordeal and financial abuses and disasters, she is now in her onward march to wealth and greatness (Langley 1859:16).

By the close of the 1850s, San Francisco's South of Market area was filled with immigrants from both Europe and the east coast of the United States. Recently-arrived easterners dominated the professional classes south of Market Street. In addition, Irish and German immigrants swelled the ranks of the working classes, and German brewers started some of the area's the earliest industries, as well as monopolizing the ubiquitous corner grocery stores and saloons.

In must be noted, however, that in spite of intensive development and large scale population boom to the east of the Fifth Street during the 1850s, the present subject area remained in a relatively undeveloped state throughout the remainder of the decade. As noted previously, the 1857 U.S. Coast and Geodetic Survey map for San Francisco shows that the present project site was occupied by a relatively small number of scattered structures of varying shapes and dimensions. The 1859 edition of the U.S.

Coast and Geodetic Survey map show no change from the situation depicted two years previously. Although, as we have seen, it was not possible to determine the precise architectural characteristics, dimensions or functions of the structures shown on the 1857 and 1859 U.S. Coast Survey maps, it is likely that most, if not all of the buildings existing within, and immediately adjacent to the confines of the project area during the final years of the 1850s were small, wood-frame residential structures.

During the 1860s, population within the South of Market region continued to expand at a rapid pace. By 1861, a building boom had started that would continue unabated through 1869. The 1860 Federal Census reveals a mixed population living in the South of Market area. Working class neighborhoods quickly filled in the narrow cross streets of Natoma, Minna, Clementina, Tehama, Hunt, Sherwood and Ritch streets. The middle class tended to build larger homes along Mission, Howard and Folsom streets. The South of Market area's most prosperous residents sought the heights of Rincon Hill along Harrison and Second streets.

Unfortunately, a review of the 1860 Federal Census for the 10th Ward of San Francisco -- which encompasses the present project area -- was of limited use with reference to the present study. For one thing, the methods used to collect and enumerate data for the 1860 census were often less than systematic. In addition, the census fails to provide specific street addresses for the residents of the 10th Ward. As a result of these

methodological factors, coupled, perhaps, with the paucity of permanent residents within the confines of the present subject area in 1860, little useful information concerning the identities and occupations of the residents of the block bounded by Market, Mission, Seventh and Eighth streets was adduced by an examination of the 1860 U.S. Federal Census.

We now turn our attention to the systematic grading and filling activities that occurred within, and adjacent to, the present project site during the second half of the 19th century. During the 1850s, 1860s and 1870s, massive grading and filling operations took place throughout the South of Market area to level the region's many sand hills and to reclaim land from the waters of the Bay, thus making way for commercial and industrial expansion. Hence, an understanding of the nature of filling and grading in and around the block bounded by Market, Mission, Seventh and Eighth streets is essential to an understanding of the development of the present project area. Additionally, a thorough analysis of grading and filling activities in and around the subject property is essential for a useful evaluation of the prospects of encountering subsurface deposits of significant, or potentially significant, cultural resources therein.

The first systematic grading activities within the South of Market region occurred during the Early Gold Rush Period. At first, fill, consisting primarily of rock, sand and assorted cultural refuse, was hauled by horse and cart to edge of the Bay

(or other intended spot) and dumped. But the mammoth task of reclaiming the Bay and the low-lying areas south of Market Street quickly necessitated the use of more sophisticated techniques.

By 1852, a giant mechanical shovel (the so-called "Steam Paddy") had been put to use on the herculean task of leveling the sand dunes in the South of Market area. An 1867 photograph taken at the intersection of Eighth and Harrison Streets shows the "D. Hewes Steam Paddy Works" in operation. Historian J.S. Hittell describes the operation of this remarkable 19th century earthmoving machine:

> [The steam Paddy] at one move would dig up a cubic yard of sand or gravel (or nearly twice as much as could be hauled by a single horse and cart) and then swing it round by a crane over a railway car into which the load was discharged. The steam paddy was at work from 1852 till 1854, and from 1858 till 1873 almost constantly, sometimes moving two thousand five hundred tons a day, and for a while two were employed. The steam shovel could not work anywhere save in sand but there were five thousand acres of it that needed leveling (1878:438).

While, as we have seen, some grading had taken place to the south of Market Street during the early 1850s, most of the region's great sand hills were not systematically reduced until after 1858. The excavated material was then taken by horse carts or railroad cars to the shoreline of the Bay and dumped into the diminishing waters of Yerba Buena Cove and Mission Bay as fill.

David Hewes, the owner of the Steam Paddy, described the task he had undertaken:

> I commenced the work of grading Market Street at the corner of Third and Market, where a hill was nearly as high as the present Call Building, in the fall of 1858. I also proceeded, on the same plan, with the work of grading Market Street and filling in water lots on the south side of Market from Fremont to Steuart, which was the east line of the bay south of Market Street. When this was done, I began filling in the Bay on the north side of Market Street from Battery down to East, taking the material from Market Street between Third and Fourth, and the sand hills between Market and Mission. When this was completed, I took up my track and laid it down Fourth Street, from Market to King Street, filling Fourth and lots on the east and west side...
>
> I then took up my track and laid in down Fifth Street, filling that street from Market to King Street, and levelled the sandhills on the north side of Market Street, reaching up as far as Post Street, and on the east and west of Fifth Street. When Fifth Street and the adjacent lots on the other side were finished, I moved my track out to Seventh Street, doing the same on that street, from the head down into the bay, as I had done of Fourth and Fifth streets. From Seventh Street I moved to Ninth and to Tenth, doing the same work as on the other streets named until Mission Bay was filled in nearly to the line of its present improvement. My track took in about two miles in extent, in what is known as Hayes Valley, to Fourth and Townsend streets. I completed my contracting in filling in San Francisco Bay, and also Mission Bay in 1873 (Wheelan 1928:15).

As we shall see in greater detail below, an examination of the 1869 U.S. Coast and Geodetic Survey map of San Francisco indicates that the grading of Market and Mission Streets, between Seventh and Eighth, had been completed by the close of the 1860s; similarly, the grading of Seventh and Eighth streets, between Market and Mission, had also been finished by this time. This chronological data with regard to grading activities on the streets bordering the present subject property is in accord with the above cited historical accounts provided above by Hittell and Wheelan. In brief, all available archival sources concur that

grading activities along the streets bordering the present subject property took place during the middle to later 1860s, and that this process of topographic modification had been complete by 1869.

As noted above, a comprehensive understanding of the nature and magnitude of cutting and/or filling is essential to an evaluation of the potential for encountering subsurface cultural deposits of significance, or potential significance, within the confines of the block bounded by Market, Mission, Seventh and Eighth streets. In San Francisco, the following formula can be utilized to approximate the amount of cutting or filling at any given location. All city grades were computed from zero base, which is 6.7 feet above the ordinary high tide mark on a pile at the boat stairs at the corner of Pacific and Davis streets: hence, the top of this wharf is 1.1 feet above city base, or 7.8 feet above the ordinary high tide mark (San Francisco Board of Supervisors 1900:16).

An 1881 publication entitled "Description of Public Property Including Channel Street and Mission Creek Lands, with Table of Grades of the Public Streets, Belonging to the City and County of San Francisco," issued by the San Francisco Board of Supervisors (on file at the Bancroft Library), provides the following information about established and completed grades for the streets in the vicinity of Assessor's Block 3702:

Established by	Intersection	Grade
Order #561	Mission and Seventh	29

The more recently published volume entitled Official Street Grades of the City and County of San Francisco -- Comprising all Grades Established to January, 1900, issued by the San Francisco Board of Supervisors (on file at the Bancroft Library, University of California at Berkeley), confirms the above noted information about the street grade established for the intersection of Seventh and Mission streets (1900:190).

Unfortunately, there is no specific archival data regarding the official street grades established for any other portions of the present subject property. Nevertheless, the information cited above allows us to estimate the type and degree of grading activity that took place within the confines of the present subject areas. The data presented in the preceding paragraph indicates that a limited amount of cutting was probably required to bring portions of the subject property into conformity with established city base specifications. In all probability, most of this cutting occurred in the vicinity of the corner of Market and Seventh streets, where the highest dunes on the property were located. By contrast, a relatively substantial amount of filling appears to have been required within the southern portion of the project site, particularly in and around the line of Mission Street.

It should be noted that the information provided above with regard to the nature and magnitude of 19th century grading procedures is in general accord with the findings of a series of geo-technical exploratory borings recently placed within the confines of the project area. These exploratory borings revealed that much of the project area was characterized by a 10-12 foot layer of fill of unknown origin (e.g., Baseline Environmental Consulting 1995:24).

The above described pattern of topographic modification, coupled with the findings of the exploratory geo-technical borings recently placed within the project area, strongly suggests that any subsurface cultural resources that may have existed within various portions of the project site prior to the commencement of systematic grading operations in the 1860s may well have survived the ravages often associated with extensive topographic alteration. In other words, any deposits of subsurface cultural resources associated with the Prehistoric/Protohistoric, Early Historic and/or Gold Rush periods that may have once existed within the confines of the project area -- particularly within the southern half of the block bounded by Market, Mission, Seventh and Eighth streets -- may still lie buried beneath a layer of later 19th century fill at one or more locations within the confines of the research area.

At this point, it should be noted that detailed descriptions, interpretations and analyses of the often complex social,

demographic, economic and political trends occurring in the South of Market region during the 1860s and 1870s can be found in the following volumes: San Francisco Waterfront: Report on Historical Cultural Resources (Olmsted et al. 1977a), Yerba Buena Convention Center: Report on Historical Cultural Resources (Olmsted et al. 1977b), Yerba Buena Center: Report on Historical Cultural Resources (Olmsted et al. 1979). However, it must be once again reiterated that during these decades the present study area was located at near the western fringe of the cultural activity documented in the works referred to above. For the most part, the block bounded by Market, Mission, Seventh and Eighth streets was just outside of and only minimally affected by the social and cultural activities taking place a few hundred meters to the east.

Indeed, a systematic review of available archival sources produced little mention of the present subject parcel for the decade spanning the years 1860 and 1869. A systematic search of the local archival repositories produced few maps, photographs and/or oral accounts which might have shed light on the specific patterns of occupation and development within the block bounded by Market, Mission, Seventh and Eighth streets during this decade. However, by all historical accounts of the South of Market region during the 1860s, the present project site developed slowly in comparison to those neighborhoods located to the east of Fifth Street. By the close of the 1860s, the project area and its immediate surroundings were still a relatively

sparsely developed area situated on the western fringes of San Francisco's downtown area.

The most detailed view of the block bounded by Market, Mission, Seventh and Eighth streets during the 1860s is provided by the 1869 U.S. Coast and Geodetic Survey map of San Francisco. Unfortunately, the 1869 U.S. Coast Survey map is often difficult to interpret, since it was prepared in a schematic fashion and with much less detail than the 1852, 1853, 1857 and 1859 editions of this document. Still, it is a valuable research tool since, among other things, it depicts the actual topography of San Francisco at the time it was drawn, and not, as is the case with some historical maps, projected development schemes and street alignments.

By the time of the appearance of the 1869 U.S. Coast Survey map, systematic grading activities had been completed on the four main thoroughfares bordering the project area. In addition, grading was well advanced within the interior of the block bounded by Market, Mission, Seventh and Eighth streets. In 1869, two long structures, or, perhaps, a series of smaller structures, existed within the confines of Parcel 1, the block bounded by Stevenson, Jessie and Seventh streets. One structure, or set of adjacent structures, fronted onto Jessie Street, while the other building, or series of closely situated buildings, fronted onto Stevenson Street. By contrast, no structures are shown existing within the confines of Parcel 2 -- that portion of the site

bounded by Jessie, Seventh and Mission streets -- at this time. However, numerous structures are shown in immediate proximity to the present project area, mainly along the frontages of Stevenson and Market streets.

The fact that no structures are noted as existing within the confines of Parcel 2 of the project area at that time may be attributable to the fact that grading and topographic modification was still taking place within the project area at that time. A review of the 1869 U.S. Coast and Geodetic Survey chart reveals that grading procedures were still underway within portions of the project site by the close of the 1860s; among other things, the Coast Survey map shows that dunes characteristic of the original topography still existed in several areas of the subject property, specifically in area near Jessie, Mission and Seventh streets.

Unfortunately, the like the earlier Coast Survey charts, the 1869 edition does not allow for an evaluation of the sizes, dimensions or architectural characteristics of the structures existing within, or directly adjacent to the subject property at the close of the 1860s. Nor does the map provide any information about the identities or occupations of the people living and/or working within the project area at that time.

Even a casual review of the historical literature leaves little doubt that great social, economic and demographic changes

occurred within the South of Market region during between the 1859 and the mid-1870s. The most notable events occurring within the South of Market region during this time took place some distance to the east of the present project site; however, the social and economic consequences of the historical processes taking place within the area had a significant and lasting impact upon the development of the present study area and its immediate surroundings throughout the final three decades of the 19th century.

Between the late 1850s and 1869, Second Street, between Market and Harrison, was perhaps the South of Market area's most fashionable thoroughfare. Hittell described Second Street in the early 1860s as "a good street for fashionable shops and a favorite promenade" (1878:379). It was here that the genteel residents of Rincon Hill came for shopping and entertainment. An 1860s photograph of Second Street, looking south from Market, shows a row of elegant, two and three story frame structures, complete with planked sidewalks and overhanging western-style awnings (see Olmsted et al. 1979: plate 16, facing page 111).

The economic and social decline of Second Street can be traced to a single year, 1869 -- when the infamous Second Street Cut was made. Hittell describes the consequences of the Second Street Cut, which was completed over the anguished protests of most of Rincon Hill's residents:

> The cut or ditch, at one place sixty feet deep, has ugly steep banks, which have slid down in wet weather;

> the falling dirt has destroyed the sidewalks; the despoiled lot owners have refused to keep the pavement in repair; heavy teams have found it more convenient to pass through other streets in going and coming from the Pacific Mail wharf... The most active advocates of the scheme made nothing by it; and the direct expense of the "improvement" was three hundred and eighty five thousand dollars, while the loss to the citizens beyond all benefit was not less than one million dollars (1878:379-380).

Although the bulk of the physical disaster associated with the Second Street Cut was to the south of Howard Street, the economic and social impact of the project was felt all the way to the north of Market Street, and to the west well beyond the line of Fifth Street. With this in mind, Hittell made the following comments:

> A company of capitalists had bought up the land on the line from Market Street to Howard, opened the street so far, and built the Grand Hotel to give value to the adjacent property and attract business to the street; but the enterprise was unprofitable. They had expected that the land would be worth fifteen hundred dollars a foot, and it did not bring as much as it cost to them... One result of the opening of this new street and of the Second Street cut was that the value of Second Street, between Howard and Market... was injured seriously, almost destroyed (Hittell 1878:379).

In part because of the disastrous consequences of the Second Street Cut, the entire South of Market area assumed an increasingly working class character from 1869 onward. Edward Muybridge's famous 1876 photographic panorama of the South of Market district, taken from Nob Hill, reveals the magnitude of the changes that had taken place along Second Street and adjacent neighborhoods in the years following the disastrous cut of 1869. The elegant wood-frame two and three-story buildings of the mid-

1860s had mostly disappeared; in their place, we see a cluster of tightly packed multi-storied structures which contained a variety of storefronts at street level with tightly-clustered working-class lodgings above.

The decline of once fashionable Second Street drastically affected the character of the various neighborhoods situated in the South of Market region, including the present subject property and its surroundings. Among other things, the many South of Market back alleys were soon almost entirely occupied by crowded, workingclass tenements. From this point onward, the South of Market region retained its pronounced workingclass character throughout the remaining years of the 19th century. Indeed, this predominant local demographic characteristic continued until the late 1960s and early 1970s, when massive redevelopment efforts began to transform and upgrade the South of Market region.

As part of the present archival cultural resources overview study, an attempt was made to consult the 1870 U.S. Federal Census for the 10th Ward of San Francisco. Unfortunately, this document -- at least as it pertains to 10th Ward of San Francisco -- has been lost from the archival record. Accordingly, the information adduced by the 1870 Federal census with regard to the population in and around the present project area could not be consulted as part of the present research project.

Another development that dramatically affected the development of the South of Market region was the construction of Long Bridge. In 1865, before the filling of Mission Bay had been accomplished, an artificial span known as Long Bridge was erected, connecting the South of Market area with Potrero Point. This wharf-like bridge carried horse-car tracks from the foot of Fourth Street to the emerging industrial district of the Potrero. Throughout the 1860s, numerous structures were built alongside the bridge.

The completion of the Long Bridge was an essential element of San Francisco's continued growth during the 1860s and 1870s. It not only facilitated development of the Potrero District, but resulted in an intensive expansion of the South of Market area west of Sixth Street in the 1870s. Hence, the history of this structure is one of the keys which resulted in the intensive occupation and development of the block bounded by Market, Mission, Seventh and eighth streets.

Many colorful accounts of the Long Bridge and its impact on San Francisco can be found in the 19th century historical literature. The following passage about Long Bridge was taken from an article entitled "Recollections of an Old Timer," in the June, 1926 edition of the South of Market Journal:

> In writing this my memory takes me back to the time of the big earthquake in 1868 in October... A bridge, as you old timers should remember, spanned this neck of the Bay. It was called Long Bridge. The bridge was considered by Nimrods as the best smelt fishing grounds around the Bay. There was an extension about one-third

> of the way across called the Cattle Wharf, being used to land cattle there, and then, herded to Butchertown which was situated at Ninth and Brannan [Langley's Directory of 1871 describes the enactment of a new city ordinance to move Butchertown from Ninth and Brannan Street location out to the Potrero] over the old Mission Creek that ran up from the Bay...This is now called the Channel. This creek ran with deep water at high tide as far as Sixteenth Street, and small craft would sail as far as the Old Mission Woolen Mills at Sixteenth and Folsom Streets.

Another reminiscence of the Long Bridge, appearing in the South of Market Journal in 1933 and entitled "The Tar Flat Boys Direct a Stranger to Long Bridge in the 1870s" reads as follows:

> ...We are now on a wharf on the outer end of the bridge which is about a quarter of a mile long and 300 feet wide, which at one time was known as the cattle-wharf, for it was here that the cattle, sheep, and hogs destined for Butchertown were unloaded and driven to old South San Francisco. Later this wharf was used by ships loading grain for Europe and there were many of them. Out in the bay you would see hundreds of the boys in boats fishing for smelt and rock cod.

An 1878 Birdseye View of San Francisco, produced by Currier and Ives of New York (e.g., Olmsted et al. 1977: Plate 4, opposite Page 46) clearly shows that the present project area was fully developed by the 1870s. The four main thoroughfares bordering the subject property were open and fully graded. According to this illustration, the block bounded by Market, Mission, Seventh and Eighth streets was filled with numerous tightly-clustered two-and-three story structures. Unfortunately, few additional details can be gleaned from this 1878 Birdseye View of San Francisco. For example, the illustration does not clearly show whether Stevenson and Jessie streets were graded

and/or open at this time. In addition, the precise dimensions, architectural characteristics and/or specific functions of the depicted buildings cannot be determined from the above referenced illustration.

As an interesting aside, we note that the filling of Mission Creek, located to the south, yet within the general vicinity of the proposed project site, was the subject of some controversy. Archival evidence indicates that unlike many of San Francisco's other streams and creeks, which were, as often as not, simply viewed as an impediment to growth and prosperity, and filled as quickly as possible to facilitate new construction, there was considerable debate within the community about the fate of Mission Creek.

The Bancroft Library at the University of California, Berkeley, contains several tracts published by doctors and local political figures on the merits and liabilities of a proposed "Mission Creek Canal." One of these pamphlets, entitled "The proposed Canal through Mission Creek and Channel Street for Navigation and Drainage, Opinions of General S.B. Alexander, and Prof. George Davidson," outlined some of the concerns raised by local citizens:

> 1. We wish to learn from you whether the proposed canal affords the best means of drainage in that section of the city?
>
> 2. Will the proposed canal remain open to the required depth, or will it fill up from material brought in by drainage, or otherwise?

3. Will the proposed canal, so constructed, be objectionable in a sanitary point of view, to the residents of that section of the city?

4. If there are objections to this proposed canal as a means of drainage, are there other and better means of draining the district? (unpublished 1870 tract on file at the Bancroft Library.)

It would seem that there was a legitimate basis for the health concerns raised by the proposal to convert Mission Creek into a navigable channel. (Over the years, Mission Creek became variously known as Mission Canal or Channel Creek; today the remnants of Mission Creek are the Mission Creek Marina). Captain Fred Klebingat, an old timer on the San Francisco waterfront vividly recalled the following about the Mission Canal:

> The creek was an open sewer. In my day it was about the same as it is now except it's been cleaned up. We **knew** what the contents of the creek were! It was as thick as soup. They said that if you fell overboard you'd not last more than two minutes. They said that if you took two gulps of that stuff it would be the end of you. In fact, it would turn white lead paint black in one night.
>
> Channel creek was never a big river, not enough water. Captain Matson's first command was the scow schooner **Mission Canal** -- probably named when they dredged Mission Creek into a navigable channel [The original creek went up to about Twelfth and Folsom.] There were no ships there in the Gold Rush days, there was no business for them there, no houses, no settlement, no streets. The creek was dredged probably in the '70s, I would guess. It was dredged to make room for lumber schooners, lumber yards, and was probably dredged inland to where it is now. The point is that it was dredged late in history (Olmsted et al. 1977:127).

It should also be noted that a review of the 1880 Federal Census for San Francisco's 10th Ward adduced no relevant information concerning the various later 19th century occupants of the

present subject property. For reasons that remain somewhat unclear, the 1880 Federal Census for San Francisco's 10th Ward contains no information for those ares west of Sixth Street. However, a review of the data contained within the 1880 Federal Census data for the remainder of the 10th Ward clearly corroborates the body of historical documentation describing the area as filled with workingclass residents, small business concerns, retail establishments and scattered light-industrial facilities.

For specific information regarding ownership of, and activities within, the present subject parcel during the final decades of the 19th century, we turn to a discussion of the Sanborn Fire Insurance Company's maps and city block books of San Francisco. The Sanborn maps represent an invaluable research tool, providing a relatively detailed picture of the type of businesses and buildings existing in the city from the final years of the 1880s well into the 20th century.

The block books are also a useful source: although they do not indicate any specific structures or activities within the parcels they discuss, they do provide an accurate record of ownership. Thus, the next section of this report will be a discussion of the late 19th century Sanborn maps, as well as the information pertaining to property ownership gleaned from early block books.

The 1886 Sanborn Insurance Company Map

According to the 1886 Sanborn map, the present subject parcel was fully graded, developed and intensively occupied by the mid-1880s. In 1886, both Parcels 1 and 2 of Assessor's Block 3702 were filled with numerous tightly-clustered one, two and three-story buildings. Within Parcel 1, these structures fronted onto Seventh, Stevenson and Jessie streets. The structures within Parcel 1 were primarily devoted to residential uses. However, a number of businesses were also in operation at that time. For example, a Chinese laundry is noted on the south side of Stevenson Street, roughly 100 feet to the west of Seventh Street. Most of the commercial establishments that existed within the confines of Parcel 1 in the mid-1880s, however, were situated in structures fronting onto Seventh Street. Here, the Sanborn map depicts a plumber, two tin shops, two saloons, an upholstery shop and a patent medicine store. It should be noted that all of these retail businesses and commercial facilities were on the ground level of structures containing residences on the second and, in some cases, the third floors.

In the mid-1880s, the demographic situation for Parcel 2 of Assessor's Block 3702 was almost identical to that described above for Parcel 1. This part of the subject property also contained numerous tightly-packed structures of one, two and three-stories. These buildings fronted onto Mission, Jessie and Seventh streets. Like the structures described above for Parcel

1, the buildings that existed within the confines of Parcel 2 in 1886 were devoted principally to residential uses. However, a number of retail and commercial businesses were also located within this portion of the subject property. For example, two Chinese laundries fronted onto the north side of Mission Street. A saloon was situated at the northwestern corner of Seventh and Mission streets. In addition, a livery stable, a blacksmith and wagon shop and a house mover were located in buildings fronting onto Seventh Street. Two other business establishments were also located along Seventh Street, but the nature of these enterprises could not be identified on account of the illegible notations made on the Sanborn map. As described above for Parcel 1, all of the commercial facilities within that portion of the block bounded by Jessie, Mission and Seventh streets were situated on the ground level of structures containing residences on the second and, in some cases, the third floors.

The 1894 Block Book

San Francisco block books for the late 19th century provide useful information regarding ownership and occupation of San Francisco properties. The 1894 Handy Block Book of San Francisco is especially useful in that it indicates property ownership on a block-by-block basis, thereby making it relatively easy to determine the person, or persons, holding title to the present subject parcels during that year. The Handy Block Book for 1894 provides information regarding the division of lots and property

ownership within the confines of the present project area. Unfortunately, this document does not provide data on individual structures or specific activities within any of the blocks it addresses.

In 1894, the present subject property was still as solidly residential in character as it had been eight years earlier, when the 1886 Sanborn map depicted the block bounded by Market, Mission, Seventh and Eighth streets. However, it is interesting to note that the patterns of property ownership within the confines of the project area varied significantly from one portion of the project site to another. For example, the northern portion of the subject block -- Parcel 1, bounded by Stevenson, Seventh and Jessie streets -- was divided into a series of small, individually owned lots; to be specific, Parcel 1 was divided into twenty-two small lots, each of which was owned by a different individual. It is well within the realm of possibility that some of the owners of these parcels resided within the buildings erected on their property. In addition to these small parcels, two larger lots, each owned by a different consortium of individuals, were situated within this northern portion (Parcel 1) of the present subject property.

In contrast to this pattern of individual ownership, the southern portion of the project area -- i.e., Parcel 2, bounded by Jessie, Seventh and Mission streets -- was divided into seven lots of considerable size. The largest of these parcels was in

the possession of the Talbot Investment Company. The remaining lots within this southern portion of the project site were owned by various consortia of individuals.

An examination of the names of the individuals owning property within the confines of the project area in the mid-1890s sheds some light on the ethnic composition of the neighborhood. A glance at the 1894 Handy Block Book confirms that the present project area, like many South of Market neighborhoods -- particularly those within the 10th Ward -- was dominated by the Irish. In 1894, as described by the Handy Block Book, the various parcels within the present study area were owned by individuals named Noonan, Sheehy, McMannish, McQuade, Sullivan, McNamara etc...

The 1899 Sanborn Insurance Company Map

The 1899 edition of the Sanborn map depicts the block bounded by Market, Mission, Seventh and Eighth streets at the close of the 19th century. By this time, the present study area was, if anything, even more residential in its basic character than it had been thirteen years before when the 1886 Sanborn map was completed and issued. The 1899 edition of the Sanborn map depicts a series of tightly-clustered one, two and three-story buildings fronting onto Stevenson, Jessie, Mission and Seventh streets.

As had been the case throughout the 1880s, a number of business enterprises existed within the confines of the project area at the close of the 19th century. Within Parcel 1, a Chinese laundry was located on the north side of Stevenson Street. This laundry may be the same business depicted by the 1886 Sanborn map; in any event, these Chinese laundries, while separated by thirteen years, occupy the same spot on Stevenson Street. In 1899, a plumber and a dealer in liqueurs were also located within Parcel 1, on the ground level of multi-story structures fronting onto Seventh street. The business enterprises located within Parcel 2 in 1899 included several saloons, a boarding house, a Chinese laundry and a materials storage facility. As was the case with the business enterprises discussed above, these commercial ventures were situated on the ground floors of two and three-story structures devoted primarily to residential uses.

As far as can be determined from a systematic review of the historical literature, relatively little new development or demographic change took place within, and immediately adjacent to the present subject property between the mid-1890s and the Great Earthquake and Fire of 1906. For example, the Handy Block Book of San Francisco for 1906, prepared just prior to the disastrous earthquake and fire of april 18, depicts a situation that was basically the same as that shown on the 1899 Sanborn map and the 1894 Handy Block Book. By 1906, ownership of some of the parcels had changed, and a few of the larger lots had been subdivided;

however, with these minor alterations, the block remained as it had been during the previous decade.

The entire subject property was completely destroyed by the first day of the fire following the Great Earthquake of April 18, 1906 (Bronson 1959:frontispiece). Throughout virtually all of San Francisco's neighborhoods, including the present subject area, it could truly be said that the 19th century came to a cataclysmic conclusion.

Due to the fact that so many documents were lost in the Great Earthquake and Fire of April, 1906, there are substantial gaps in the existing archival record concerning the history of the present project area during the final years of the 19th century; accordingly, our knowledge of specific activities within, and adjacent to, the project site during this era remains somewhat incomplete. Nevertheless, a number of conclusions can be stated with relative certainty. It is known, for example, that the subject parcel was filled and graded at various points in time between the mid-to-late 1860s and the mid 1870s. Thereafter, for the remainder of the 19th century, the subject parcel was primarily devoted to residential activities. The principal commercial facilities existing within the project area during the final two decades of the 19th century were small-scale enterprises and/or retail establishments, like saloons or restaurants, blacksmith shops, and laundries.

Based upon a detailed evaluation of available archival sources, it is the judgement of the present writer that, given the type of structures that existed within the confines of the subject parcel -- as illustrated by the 1886 and 1889 Sanborn maps -- the possibility of recovering architectural remains, cultural features and/or related archaeological materials from the late 19th century is substantial. However, as shall be discussed in greater detail below, before being deemed of significance, or potential significance, any such late 19th century cultural resources would have to be specifically assessed in terms of their stratigraphic integrity, cultural characteristics and/or historical associations.

The Twentieth Century (1906 - Present)

In the aftermath of the Great Earthquake and Fire of April, 1906, San Franciscans began the daunting task of rebuilding their city. In some portions of the city, these renovation efforts proceeded with amazing rapidity. Such was not the case, however, within the confines of the present project area. To the contrary, archival sources indicate that the present subject property was rather slow to rebuild. For example, the 1913 Sanborn Fire Insurance Company map shows that much of the northern half of the project area (Parcel 1) remained vacant seven years following the Great Earthquake and Fire. Considerably more rebuilding and development had been completed within the southern half of the project site by 1913 (Parcel 2);

however, several large lots were still vacant within this portion of the project area.

It should also be noted that the 1913 Sanborn map shows that the tightly-clustered residential structures that had been so ubiquitous within the subject parcel during the late 19th century had all but disappeared. By the early years of the 20th century, the project area had become primarily devoted to commercial enterprises. Among other things, the 1913 Sanborn Insurance Company map shows the presence of several restaurants, a moving picture company, several retail shops and grocery stores shops, saloons, an automobile storage facility, a printing shop, several small hotels, a tent and awning factory, a glass works and an artificial limb factory.

By the close of the first half of the 20th century, the project area and its immediate surroundings had assumed the basic architectural and demographic characteristics by which they have been known ever since. For example, an aerial photograph of the project site in 1848 (e.g., Baseline Environmental Consulting 1995:11) shows that the subject property and the surrounding blocks contained many of the structures that still occupy the area today. With these descriptive remarks, we will, at this juncture, conclude our treatment of the 19th and 20th century history and development of the Seventh and Mission Street site in San Francisco's South of Market region.

Conclusions and Recommendations

Based upon the findings of archival research, the following conclusions are offered regarding the potential existence of subsurface deposits of cultural resources of significance, or potential significance, within the present project site at the intersection of Seventh and Mission streets in San Francisco. Available documentary evidence suggests that there is a possibility -- although by no means a confirmed certainty -- that prehistoric/protohistoric archaeological remains may exist, or may once have existed, at one or more locations within the confines of the subject property.

At the beginning of the historic era, the present study area was situated in an area that bordered the waters of Mission Bay and Mission Creek. Previous archaeological research in San Francisco's South of Market region suggests that the present project area and its immediate surroundings would have represented a generally favorable habitat for Native American hunters and gatherers: before Euro-Americans altered the natural topography in the second half of the 19th century, Mission Bay, Mission Creek and Yerba Buena Cove teemed with a variety of floral and faunal resources.

In fact, we have seen that the various prehistoric sites recently discovered within the South of Market area (e.g., Pastron and Walsh 1988a, 1988b; Archeo-Tec 1988; Pastron 1990)

seem to have been deliberately located in places well suited for exploitation of the bountiful economic resources within this ecotone.

Before proceeding further, it must once again be stressed that while there is a possibility of encountering prehistoric and/or protohistoric cultural resources within the confines of the present study area near the corner of Seventh and Mission streets, no firm evidence of the existence of such archaeological materials has been adduced. Hence, the conclusions presented above are intended to demonstrate a potential for the presence of such resources within the project area, based on informed speculation and comparative data.

One final point concerning the possible presence of prehistoric cultural resources within the present subject property needs to be addressed. As we have seen, much of the present project site was situated in a low-lying area which was filled during the 1860s and the mid 1870s. It appears, therefore, that any buried prehistoric/protohistoric cultural resources may still lie buried in a relatively intact state beneath the surface of the ground within portions of the present project site. Indeed, as we have seen, the nearby Stevenson Street, Market Street and Yerba Buena shellmounds -- CA-SFr-112, CA-SFr-113 and CA-SFr-114 -- were encountered within sites where extensive 19th century activities had substantially reduced the original topography. In all of these cases it would not have been unreasonable to assume

that any buried prehistoric remains would have been completely destroyed by extensive 19th century grading activities. Yet, in all cases the well preserved prehistoric deposits were encountered at depths ranging between 15-20 feet below present street grade. In other words, the prehistoric resources had been so deeply buried by drifting sands prior to the beginning of the historic era that they survived in spite of massive 19th century topographic alteration. In the case of the present subject property, which was mainly filled rather than cut, it seems reasonable to posit that any prehistoric/protohistoric cultural resources that once existed within the subject parcel may still remain intact at an unspecified depth beneath the present ground surface. In conclusion, in the judgement of the present writer, available data do not allow us to rule out the possible existence of significant, or potentially significant prehistoric and/or protohistoric subsurface cultural deposits within the site area.

Turning our attention to the historic era, all available evidence suggests that there is little likelihood of recovering cultural resources from the Spanish, Mexican, Early American and Early Gold Rush eras (1776 - 1848) within the confines of the present subject property. There is, however, a substantial possibility that subsurface cultural resources of significance, or potential significance, associated with the Later Gold Rush and Late Nineteenth Century period may exist within the confines of the project site.

Archival data indicates that between 1776 and the mid-1850s, the subject area remained in a completely natural state, unoccupied and unexploited. With the population boom that accompanied the Gold Rush, the project area became gradually filled as development gravitated away from the original encampment of "Happy Valley" to include the entire South of Market district in the later 1850s. Following the completion of filling and grading activities in the 1860s and 1870s, the subject property continued to develop at a relatively slow pace. It is possible that architectural remains and/or related cultural features of significance, or potential significance, from the Later Gold Rush and/or late 19th century eras may exist at one or more locations within the confines of the subject property. Of these various historical eras, it is the judgement of the writer that cultural resources associated with the Later Gold Rush Period would, in all likelihood, present the greatest prospect for being deemed of historical significance. Any cultural deposits from the Later 19th Century era encountered within the project site would have to be carefully evaluated in terms of their stratigraphic integrity, cultural characteristics and/or historical associations before a determination of significance, or potential significance, could be made.

In light of the conclusions presented above, the following recommendations are offered for consideration. The possible presence of prehistoric/protohistoric and Later Gold Rush archaeological resources within the project area warrants atten-

tion. Accordingly, prior to the commencement of construction activities within the research area, it is recommended that the following program of archaeological testing and evaluation be implemented within the confines of the project area to determine the presence/absence of any prehistoric/protohistoric and/or historic period cultural resources existing within the confines of the subject property. If such subsurface cultural resources are identified, a second principal objective of the recommended archaeological testing program would be to ascertain the age, areal parameters, cultural characteristics, stratigraphic integrity and historical associations of the materials that have been encountered. Finally, the recommended program of pre-construction archaeological testing and evaluation would assess the significance of those subsurface cultural deposits that have been identified within the project area.

The recommended pre-construction archaeological testing procedures would consist of the placement and systematic evaluation of a series of mechanical exploratory borings at selected locations within the confines of the subject parcel. The recommended research should be conducted under the supervision of a qualified archaeological consultant with documented expertise and experience in the investigation of both prehistoric/protohistoric and historic period sites within an urban setting. The selected consultant would bear the responsibility for devising an appropriate testing methodology to be implemented within the project site, and would select the precise locations to be

investigated during the program of archaeological exploration and evaluation.

Upon completion of field testing procedures, the designated archaeological consultant should conduct an appropriate program of laboratory analysis and interpretation upon any cultural materials that have been recovered. Additional archival studies would be conducted, as appropriate, under the direction of the designated archaeological consultant. At the completion of the above described field and laboratory procedures, the Principal Archaeological Investigator should submit an appropriately detailed written report to the project sponsor which describes the findings of the pre-construction archaeological testing program, assesses the significance of any cultural resources recovered and proposes appropriate recommendations for any additional procedures deemed necessary for the further investigation of and/or mitigation of adverse impacts to those cultural resources of documented significance which have been detected within the confines of the present project area at the intersection of Seventh and Mission streets.

In conclusion, the present Phase 1 archival cultural resources overview study would be incomplete without a final cautionary word. It remains possible that unanticipated cultural resources of significance, or potential significance, may be encountered during construction within the present subject property. Therefore, if during the course of construction on the

present subject property, any such unexpected deposits of cultural materials of potential significance are encountered, it is recommended that all earthmoving activity in the area of impact cease immediately until a qualified archaeological consultant has been given an opportunity to examine the findings, assess their significance and offer appropriate recommendations for the further investigation and/or mitigation of adverse impact to the cultural resources which have been uncovered.

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